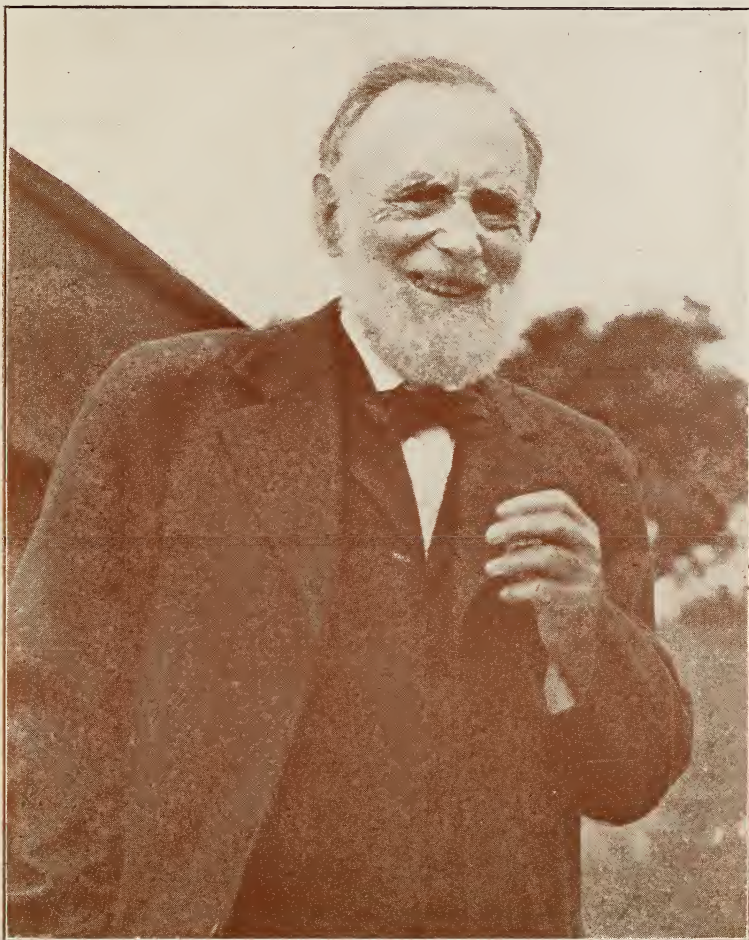


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Gleanings in Bee Culture



Caught by the camera in laughing mood. Aug. 21, 1920.

NOW IN THAT BETTER WORLD

"Anyway, I've had a good time in the past. If the next world is any better than this---and I am sure it is---it must be a very fine world."---Dr. Miller, in *Gleanings* for January, 1920.

VOL. XLVIII

October, 1920

NUMBER 10

WAREHOUSE JUST BEING COMPLETED TO
STORE YOUR HONEY

Let us store or sell it for you



Our Factory Has Been Enlarged to
Insure More Prompt and
Efficient Service.



Full Line of

SUPPLIES & FOUNDATION

all the time.



Always in the market for

WAX AND HONEY

Send in samples.

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LOS ANGELES, CALIFORNIA

"Griggs Saves You Freight"

TOLEDO

Now for the 1920
Honey Crop

We will buy it, both Comb and Ex-
tracted

We want especially White Orange,
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Basswood, Raspberry

Write us what you have, sending sam-
ples and prices asked in first letter

Second-hand 60-lb. Cans

These cans used only once, packed
in good cases; 10 cases, 70c; 50 to
100 cases, 65c; 100 to 500, 50c

Beeswax Wanted

GRIGGS BROTHERS CO.
Dept. No. 25 Toledo, Ohio
"Griggs Saves You Freight"

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We carry a complete line of Root's goods and we solicit
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service. Catalog for the asking.

THE A. I. ROOT COMPANY (Indianapolis Branch) 873 MASS. AVE.

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New prices are now in effect, and a new condensed price list giving latest prices is nearly
ready for distribution. Send for it.

HONEY AND BEESWAX

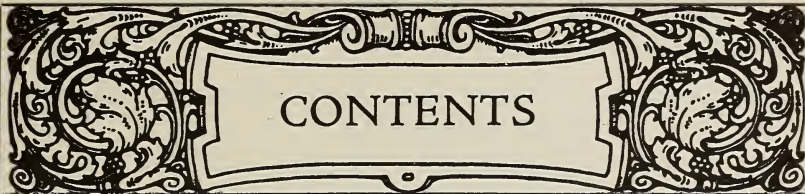
We are using increasing quantities of choice honey to pack in glass, and can also use quan-
tities of beeswax in preparation for next season. We are here to serve you.

THE A. I. ROOT COMPANY

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SAN FRANCISCO, CALIF.

OF CALIFORNIA

1824 EAST 15th ST.
LOS ANGELES, CALIF.



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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

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Editor

A. I. ROOT
Editor Home Dept.

IONA FOWLS
Assistant Editor

H. G. ROWE
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WHEN THE BEES STING,

You'll Need an "Ideal Bee Veil"--True to its name.
\$1.95 postpaid in U. S. A.

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Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

WAX--OLD COMB.

We pay you the highest market price for rendered wax, less 5 cts. per pound for rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

THE FRED W. MUTH CO.,

"The Busy Beemen"

CINCINNATI, - OHIO.

1920

QUEENS

1920

A colony of bees with a poor queen is worth the hive and fixtures. A colony of bees with a good queen has no limit in value, the honey flow alone being the determining factor. I am using my thirty-five years of beekeeping and queen-rearing experience to produce the best that can be produced, and sell at a figure that will sustain the high quality of my queens.

PRICES

One, \$2; three, \$5.50; six, \$10; twelve, \$19. All amounts over one dozen, \$1.50 each. I sell only untested queens and make a specialty of this line. I select no queens, but try to have them all so good that there is little chance for selection. 1920 circular now ready.

Season opens April first.

P. C. CHADWICK

KERN COUNTY

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Lewis Bee Supplies—Dadant Foundation

A full line of supplies for the practical bee men at your command.
Additional information to beekeepers gladly supplied upon request.

A Post Card Will Bring Our Catalog--Write Dept. C.

Western Honey Producers

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Sioux City, Iowa

*HONEY**HONEY***HONEY WANTED**

Send us a sample of your honey if extracted, state how put up and your price. We are also buyers of comb, can use unlimited quantities if quality and price are right. We remit the same day goods are received.

C. H. W. WEBER & COMPANY

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"EVERYTHING IN BEE SUPPLIES"
"SUPERIOR" FOUNDATION
HONEY CANS

We are at your service

Beeswax Wanted at Top Market Price

Superior Honey Company -:- Ogden, Utah
 (MANUFACTURERS OF WOOD PROCESS FOUNDATION)

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BY MAIL
AT 4%

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We have a large number of customers in all parts of the country, who find that they always get prompt and courteous attention to their requirements, four per cent compound interest, and unquestioned safety when they bank with us BY MAIL.

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THE SAVINGS DEPOSIT BANK CO.
 A.T. SPITZER, Pres.
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MEDINA, OHIO

HONEY MARKETS

The present honey market is not a strong one, as will be seen by reference to the quotations furnished by the Bureau of Markets and printed below. An unusual dullness of the fall season prevails, and the falling price of sugar has somewhat adversely affected current honey prices.

U. S. Government Market Reports.

HONEY ARRIVALS, SEPT. 1-15.

MEDINA, O.—10,275 lbs. from Ohio arrived. Not previously reported Aug. 24, 6,327 lbs. from Ohio arrived.

SHIPPING POINT INFORMATION, SEPT. 15.

LOS ANGELES, CALIF.—Light wire inquiry, demand slow, carloads f. o. b. usual terms: Few sales, per lb., white orange and sage mostly 16-18½c, some high as 20c; light amber sage 16-17c; light amber alfalfa 13-15c. Beeswax, 40-44c. Dullness of honey market is assisted by weakness of sugar market. Some honey is being marketed in small containers. Glass jars and 5-10-lb. cans are reported moving well.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—No arrivals since last report. Demand and movement very light, market steady. Sales to jobbers, comb: New York, 24-section cases white clover, old crop, few sales \$9.00. Beeswax: Market steady. Domestic, light 40-42c per lb.

CHICAGO.—Since last report, 1 car California, 1 car Idaho arrived. Demand and movement slow, market weak and unsettled. Sales to jobbers, extracted: per lb., Idahos, Californias, and Colorados, alfalfa and clover, white 18½-19½c, light amber 17-18c. Comb: Idahos, Californias, and Colorados, clover and alfalfa, No. 1, light \$7.00 per 24-section case. Buyers are purchasing sparingly at shipping points owing to wide difference in prices asked for same quality of stock in same section by different growers and dealers. Beeswax: L. C. L. Receipts liberal, demand and movement moderate, market steady. Sales to jobbers, per lb., Oklahomas, Texas, and Colorados, light 40-42c, dark 35-39c.

CINCINNATI.—1 car California arrived. Supplies liberal, practically no demand or movement, no sales reported, all honey being bottled. Beeswax: Supplies moderate, demand and movement good, market firm. Sales to jobbers, average yellow 44-46c per lb.

CLEVELAND.—Supplies light, demand slow, movement draggy, market slightly weaker. Sales direct to retailers, extracted: per lb., 60-lb. tins Colorado and Utah, light amber alfalfa 16-18c, mostly 16-17c; white sweet clover 17-19c; California, white orange blossom 19-21c. Comb and beeswax: Supplies very light, too few sales to establish market.

KANSAS CITY.—No carlot arrivals since last report. Supplies moderate, demand and movement moderate, market dull. New stock, comb: Iowa, alfalfa and clover, light mostly \$8.00 per 24-section case. Extracted: Colorado, light amber alfalfa, No. 1, mostly 22c per lb.

NEW YORK.—Since last report, 420 lbs. from Maine arrived, supplies moderate, demand and movement slow, market dull. Sales to jobbers and large wholesalers, extracted: domestic, per lb., Californias, light amber alfalfa 14-15c, white orange blossom and white sage 18-19c, few sales 20c; sweet clover 17-18c, mostly 17½c; West Indian, refined, per gallon, \$1.20-1.45, mostly \$1.25. Beeswax: No arrivals reported, supplies moderate, demand and movement slow, market steady. Sales to jobbers and large wholesalers, per lb., South American and West Indian, crude, light 28-30c, dark 24-26c.

MINNEAPOLIS.—Supplies light, demand and movement slow, market dull. Sales direct to retailers, comb: Colorados, sweet clover, No. 1, white, 24-section cases \$7.00. Extracted: per lb., western, 60-lb. cans light amber alfalfa 20-21c, white sweet clover 21c.

PHILADELPHIA.—Since last report, approximately 36,000 lbs. from California, 1,400 cases

from New York arrived. Demand and movement moderate, market steady. Sales to jobbers, extracted: per lb., California, white orange blossom 21c; New York, white clover 19c. Beeswax: No sales reported.

ST. LOUIS.—Receipts and supplies very light, demand and movement slow, market dull. Sales to jobbers, Comb: No sales reported. Extracted: Few sales. Mississippi and Arkansas, light amber, mixed clover and various flavors in 60-lb. cans 16-18c per lb. Beeswax: No arrivals, supplies very light, demand and movement slow, market weak. Sales to jobbers, prime yellow 30-31c per lb.

ST. PAUL.—Supplies very light, demand and movement slow, market dull. Sales direct to retailers, Comb: Minnesotas, No. 1 white clover, 24-section cases \$8.00.

George Livingston,

Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—During the last month there has been a little more inquiry for extracted honey, the total sales amounting to 560 barrels. The value of extracted honey in American currency is 14 cents per pound. In beeswax, the market continues dull. The value in American currency is 37 cents per pound.

Liverpool, England, Sept. 7. Taylor & Co.

CUBA.—Honey is quoted at \$1.30 a gallon and yellow wax at 34 cents a pound.

Matanzas, Cuba, Sept. 7. Adolfo Marzol.

Opinions of Producers.

Early in September we sent to actual honey-producers, scattered over the country, the following questions:

1. In your locality what part of the honey crop is already out of the hands of the producer?
2. At what wholesale price is honey selling in your State?
Extracted honey.
Comb honey.
3. At what retail price is honey selling in your State?
Extracted honey.
Comb honey.
4. What is the general condition of the market?

Answers, as condensed by the editor, are as follows:

CALIFORNIA.—About 80-90 per cent of crop out of hands of producer. Extracted honey is selling at retail at 20-35c; comb at 35-45c. I have seen no first grade on the market. Market is slow—more so than usual. Heretofore I considered the slow market due to presidential campaign. Some consider the cause to be the lower market in sugar.—M. H. Mendleson.

CALIFORNIA.—Ninety-five per cent of the crop is out of the hands of producers. Extracted honey at wholesale is selling at 20c; at retail, 25-35c. Comb, at wholesale, \$7 a case; at retail, 40c. The market is weak.—L. L. Andrews.

COLORADO.—The honey situation still appears to be largely in the nature of a waiting game. The larger producers still hold most of their honey and the buyers are not active. Probably not over 25 per cent of the crop in this part of the State has left the producers' hands. I know of only one car of honey shipped from the western slope. Small lots of honey have been sold at 18 to 20 cents for extracted, and \$6 to \$7 for comb. Retail prices, from 20 to 30 cents for extracted, and 25 to 35 cents per section for comb. The local demand is very good, and a large proportion of the crop could be disposed of in this way. The latter part of the season has not been as good as expected, and the crop, as a whole, will be considerably less than that of last year.—J. A. Green.

FLORIDA.—We haven't had much honey to sell so far, but cabbage palmetto is getting very good at present. Extracted honey is selling at wholesale at 18c; at retail, some as high as \$1.00 per quart in glass. Demand is good.—Ward Lankin.

IDAHO.—Probably 75 per cent of the comb honey and 5 per cent of the extracted are out of the hands of the producer. Extracted is selling at wholesale at 20c; at retail, 50c for pint jar. Comb honey, at wholesale \$6.75 to \$7.00 for fancy; at retail, 30c and upward. Market good for comb, slow for extracted.—E. F. Atwater.

ILLINOIS.—None of crop out of producers' hands. Extracted honey is holding at wholesale for 20c; at retail, 25c. Comb, at wholesale, 30c; at retail, 35-40c. No movement yet, only in small way to consumers.—A. L. Kildow.

INDIANA.—Practically all honey is sold to consumers and retail dealers, being supplied the year round; hence only a small part of the crop of 1920 is disposed of. Extracted honey is selling to retailers at 25c in 60-lb. cans, 28-30c in pails; at retail, 35c in pails, in 15-oz. jars 45c. Comb honey, to retailers, \$8.40 per case; at retail, No. 1, 45c. About the usual demand. Crop above normal.—E. S. Miller.

IOWA.—One-fourth of crop out of producers' hands. Eighteen cents offered for extracted honey at wholesale, one lot selling at 25c; at retail, 25-30c. Comb honey at retail sells at \$7.50 to \$8.40. Selling quite freely on home trade.—Frank Coverdale.

KANSAS.—Perhaps one-half of crop is out of hands of producer. Extracted honey is selling at wholesale at 25c; at retail, 35c. Comb, \$8 to \$9 at wholesale; at retail, 45c.—O. A. Keene.

KANSAS.—One-fourth to one-half of crop is sold. Extracted honey is selling at wholesale for 25-27c, at retail 27-30c. Comb honey, at wholesale \$7-\$8 per case of 24 sections; at retail, \$8 to \$9 per case. Market is good.—J. A. Nininger.

MASSACHUSETTS.—One-tenth of crop is sold. Have heard of no sales of extracted honey at wholesale. It is selling at retail for 50-60c in glass. No comb. Market is rather slow since price of sugar dropped.—O. M. Smith.

MICHIGAN.—One-fifth of crop out of hands of producer. Extracted honey is selling at wholesale for 22-28c; at retail, 28-40c. Comb, at wholesale, 30-38c; at retail, 40-50c. Wholesale market is rather inactive; retail market good, with increasing demand at fair prices.—B. F. Kindig.

MISSOURI.—Extracted honey is selling at wholesale at \$3.00 per gallon; at retail, \$3.50 to \$4.00 per gallon. Comb honey at wholesale, \$6.75 to \$8.40; at retail, 45-50c per section. The market is dull for this time of year.—J. W. Romberger.

NEBRASKA.—Not any part of the honey crop is out of the producers' hands. Extracted honey is selling at wholesale at about 22c; at retail, 30-35c. Comb honey, at wholesale 25c; at retail, 45-50c. The market is rather slow.—F. J. Harris.

NEW JERSEY.—No honey produced here this season. At wholesale extracted honey is selling at 18-25c; at retail, 50c pound jar and \$1.25 quart jar. Comb honey at wholesale, 18-25c. The market is dull.—E. G. Carr.

NEW YORK.—Extracted honey selling at wholesale 20-25c; at retail averaging 35c, some at 50c. Comb honey selling at wholesale \$8 to \$9.50 per case of 24 sections; at retail, 40-50c. Market very unsettled.—Geo. H. Rea.

NEW YORK.—About two-thirds of crop out of hands of producer. Extracted honey is selling at wholesale at 16-18c; at retail, 25-35c. Comb honey at wholesale around \$8 a case; at retail, 45c. Market is good on comb, bad on extracted.—F. W. Lesser.

NEW YORK.—Probably 25 per cent of crop sold. Trade mostly retail. Not much wholesale demand. Extracted honey is selling at wholesale for 20-25c for light; at retail 25-40c. Comb, \$7.20 to \$8.50 per case of No. 1 and fancy at wholesale; at retail, 40-60c. Retail demand is good. Wholesale market weak. Producers not at all anxious about selling.—Adams & Myers.

OHIO.—About one-fourth of crop is sold. Extracted honey is selling at wholesale at 25c; at retail, 30c. Market not very active.—Fred Leininger.

TEXAS.—Seven-eighths of crop is out of hands of producer. Extracted honey is selling at wholesale 18-20c; at retail, 30-35c. Bulk comb, at

wholesale 24-30c; at retail, 35-40c. Local market good; no local supply.—H. B. Parks.

TEXAS.—None of the honey crop in the hands of the producer. Extracted honey is selling at wholesale at 17c; at retail, 20c. Comb honey at wholesale 20c; at retail, 23c. Condition of market is good.—J. N. Mayes.

EAST TEXAS.—About 75 per cent of crop out of hands of producer. Extracted honey selling at wholesale at 15-20c; at retail, 20-30c. Market firm.—T. A. Bowden.

TEXAS (Lower Rio Grande Valley).—Market unsettled at present time on account of sugar prices dropping.—A. Lynn Stephenson.

UTAH.—Ninety per cent of my 15 tons is sold at 20c to jobbers. Extracted honey is selling at wholesale at 14-16c; at retail, 25-30c. Comb, at wholesale, \$5.50 to \$6; at retail, 25-33c. Market is panicky, some producers trying to let go their crop, feeling that all prices will drop and that honey will have to bear its share of the burden.—M. A. Gill.

VIRGINIA.—Extracted honey is selling at wholesale at 25-35c in bottles; at retail, 40-55c in bottles. Comb honey at wholesale, 25-35c, lb. section; at retail, 40-50c, lb. section. Market movement slow, retailers stocked.—J. H. Meek.

WISCONSIN.—Only a few scattered beekeepers have disposed of their entire crop. A great deal of honey is being sold locally. A few beekeepers have sold extracted honey as low as 20c wholesale. The majority are holding at 25-30c. The retail price is 30-35c. As to comb honey, I have heard of one or two beekeepers who are selling at 25c wholesale. The general price seems to be 35c and 40c, retailing at 40-50c. The general condition of the market seems to be good.—H. F. Wilson.

SPECIAL NOTICE BY A. I. ROOT.

"ALL'S NOT GOLD THAT GLITTERS."—POTATO ROT.

On page 495 of our August issue I mentioned planting a bushel of the Canadian potatoes pictured on the opposite page. Well, I was rejoicing in the promise of a splendid crop at the rate of over 200 bushels per acre of great nice potatoes; but just as I began to dig them I found one or two in a bushel that were rotten. Later the number of rotten ones increased, and then I overhauled those put in the cellar, and they were also rotting. They were promptly taken out of the cellar and exposed one whole day to the hot rays of the September sun, put back in cold cellar in open slatted potato-crates, and the trouble ceased. The bacteria of the rot, we are told at the experiment station, are killed by the heat and light of the sun. Burpee's Extra Early and Early Ohio, side by side, had no rot.

Medina, O., Sept. 23, 1920.

SUBSCRIPTION NOTICE.

After Oct. 1, 1920, no subscriptions for Gleanings in Bee Culture will be received at less than the one-dollar-a-year rate, the two-, three- and five-year-in-advance low subscription rates being withdrawn.

Gleanings in Bee Culture.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., OF GLEANINGS IN BEE CULTURE, PUBLISHED MONTHLY AT MEDINA, OHIO, REQUIRED BY THE ACT OF AUGUST 24, 1912.

Editor, E. R. Root, Medina, Ohio; Managing Editor, H. G. Rowe, Medina, Ohio; Publisher, The A. I. Root Co. Stockholders holding 1 per cent or more stock as follows: Boyden, A. L.; Boyden, Carrie B.; Boyden, Constance M.; Boyden, L. W.; Calvert, J. T.; Calvert, Maude R.; Root, A. I.; Root, E. R.; Root, H. H.; Root, Susan. There are no bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities.

H. G. Rowe, Mng. Editor.

Sworn to and subscribed before me this 18th day of September, 1920. H. C. WEST, Notary Public.

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Well made of the best, soft, light cypress which defies decay. Bottoms, covers, hive bodies, hive stands, supers, frames, and foundation. Special discounts on large orders for bottoms, covers, hive bodies and foundation.

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1-lb. Round Glass Jars, 24 to the case.

Weis Fibre Containers in six sizes, from 6 oz. to 5 lbs.

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60-lb. Cans, two cans to the case.

Comb Honey Shipping Cases in 12-lb., 16-lb., and 24-lb. sizes.

Seven per cent Early Order Cash Discount for October orders. An additional Quantity Discount for large orders.

Better order your supplies during fall and winter months.

M. H. Hunt & Son
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We can not stop lest beekeepers be disappointed. Help us avoid disappointing you next May. Order now. It will pay you well.

Order in October for next year.
Get the extra 7 per cent discount now.
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For



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Get "How to Winter Bees Outdoors," a booklet for 5c, or send
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Makers of Lewis "Beeware."

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GLEANINGS IN BEE CULTURE

OCTOBER, 1920



IT IS with very great satisfaction that we announce that Geo. S. Demuth, assistant

**Geo. S. Demuth
to Join Our
Editorial
Staff.**



to Dr. E. F. Phillips in the department of Bee Culture Investigations, Washington, D. C., is to become the active editor and directing hand in Gleanings in Bee Culture. It gives us this great satisfaction to announce Mr. Demuth's coming to Gleanings, because we believe it will be welcomed as good news by our every reader, and because we believe Mr. Demuth to be one of the best-informed beekeepers and investigators in this country. Not only this, but he is a very successful beekeeper himself, year in and year out, and he has the confidence of beekeepers from coast to coast, and from Canada to the Rio Grande, as very few American beekeeper authorities have ever had. He measures full up to a leader in beekeeping.

A personal word will be pardoned the writer, who for 35 years has borne the responsibility for the editing of this journal. In giving over the chief responsibility for its editorship to other hands, I am not giving up my interest in Gleanings' welfare nor withdrawing from its editorial staff. I expect at least to fill the part of what might be called field editor, writing for it and gathering new material for its columns in my extensive travels over the country. I shall also counsel as to its policies and features at all times, and retain a keen interest in its every issue.

But with the oncoming of the years, new and ever increasing duties in connection with The A. I. Root Company's large business affairs and an ever more insistent call to be out in the field and there keeping touch with every beekeeping interest, have more and more encroached upon my time and energies. So it has seemed advisable to delegate to other hands the guidance and first-hand work of editing Gleanings.

Mr. Demuth will come to the head of Gleanings editorial staff about Nov. 1, next, and will have got comfortably fitted to the editorial chair by the beginning of a new year. I am certain that every American beekeeper will welcome him to his new position of great usefulness at the editorial helm of Gleanings.

E. R. Root.

THE AVERAGE price at which honey is now quoted by the Bureau of Markets,



**Handling
This Year's
Honey Crop.**

is slightly higher than last October; but, as is unusual at this time of the year, the movement

is slow and the market dull. This, of itself, is no cause for worry to the honey-producer; but there are a few new factors that should be recognized.

The present financial condition of the country, the decreasing price of sugar, and the good honey crop this year have caused some producers to sell their entire crop at a first-offer price. This flooding of the market has, of course, somewhat depressed the price of honey. A great many of the beekeepers, because of the high prices of other commodities, feel that they cannot afford to sell under present conditions and are holding for prices as high as last year or higher.

It is quite right that producers should obtain such a price; but, with the present crop of honey and the wary attitude of wholesalers who have not yet recovered from the jolt that many of them got in the sudden decline of sugar prices, it is doubtful whether beekeepers should hold their honey for wholesale disposal.

This year we believe is unusual, and, as we have previously said, whether or not the beekeeper obtains a fair price for his honey will this year depend upon himself more than ever before. The solution to the whole problem, as we see it, is the local distribution of the producer's crop thruout his own and neighboring towns. No matter how good one's local trade may be, the chances are that if it is given business-like attention, it may easily be doubled or trebled this year. Systematic advertising thru the local papers and regularity in canvassing will do wonders in disposing of the crop. It has always been a great mistake for beekeepers to dispose of their honey all at once. The honey should be sold gradually, if sold at all this season, and the price thus stabilized. A beekeeper who produces a fine grade of honey and works up a dependable trade that remains active thruout the year, has a valuable asset that cannot be taken from him. Let beekeepers not be caught napping, but let them obtain what their honey is actually worth.

SOME ONE ASKED G. F. Demuth at one of the short-course meetings in Columbus, O., what the proper temperature of a bee-cellar is. His prompt answer was, "that depends."



**Necessary
to Successful
Cellar Wintering.**

The Government Bureau of Entomology has proved that the most quiescent state of a cluster of bees on combs in a hive—a state where the bees eat the least stores and winter the best—is about 57 degrees Fahr. outside the cluster in the hive. Getting down to the exact question Mr. Demuth said that the temperature on the inside of the cellar should be such as to favor a temperature of 57 degrees inside of the average hive. He recommended placing a thermometer on the bottom-board of a few of the hives. If the temperature of the bottom-board is above 50 degrees, but below 57, the colony cluster should be somewhere about 80; or, in other words, the temperature of the cellar should be regulated according to the size of the **average colonies** and the size of the **average entrances**. Where the colonies are all strong and the entrances small, the temperature might be much lower than where the reversed conditions would apply. In the former case, 43 degrees might be about right for the cellar; in the latter case, 50 might not be too high.

Mr. Demuth's answer reveals the fact that, on the subject of cellar temperature and ventilation, we all may have been leading each other astray. The exact temperature of the bee-room is not vital; but the temperature of the hive is, and the nearer it is to 57, the better. It is not practicable to run a thermometer down among the bees, because then the temperature would immediately rise. The only thing to do is to test the temperature of the air **between** the bottom-board and the bottoms of the frames. Should that temperature show close to 57 or above, the cellar should be cooler or the entrances greatly enlarged; if 52, the cellar temperature is about right provided the colony is an average one.

In the average bee-cellar it is not always easy to regulate the temperature with exactness. If the temperature is a little high, the entrances of the hives should be larger. If it is a little low, the entrances should be smaller. Sometimes when the temperature is too low it is advisable to close both the cellar ventilators, when the natural heat of the bees will raise the temperature in the cellar. In this connection the Bureau has experimented to show that the ventilation in a bee-cellar is valuable only as it affords means for raising or lowering the temperature—not because the bees need fresh air.

The work of Dr. Phillips and of Mr. Demuth, of the Bureau of Entomology, on this point is very interesting. A careful reading of the preceding will show **why** one man favors a low temperature in a cellar and another a high one, and yet both may have

equally good results. It also shows why some favor ventilators and some do not, because the vital thing is the temperature of the cluster itself rather than that of the cellar.



A FEW years ago we were accustomed to think of alfalfa as the main source of honey in the Rocky Mountain States, if not the main honey plant in the entire United States. During the



**Sweet Clover
At the Top
Of the List.**

last few years conditions have changed. We must now put sweet clover at the top of the list for actual quantity, and in quality it is second to none. It has come to pass that in some of the alfalfa States sweet clover will run about fifty-fifty with alfalfa in aggregate production. In the dry-farming areas it would stand about seventy-five to twenty-five of alfalfa. There are some portions of the United States where sweet clover is produced as an exclusive crop. Over much of the territory of the Eastern States north of the Ohio River, it yields no surplus, but is valuable as a brood-booster.

A few days ago we ran across an instance of the increasing popularity of sweet clover only a few miles from our home. A farmer, who had come here from a much better farming section, had purchased a rather stiff clay farm of about 200 acres. We asked him how he farmed such land after being accustomed to much better soil. His reply was: "Sweet Clover." In very fact he was making sweet clover the one big, essential crop on his 200 odd acres of clay land.

In northern Alabama and Mississippi and a good deal of the mountain areas of the Eastern States the legume is a very important honey plant. In Oklahoma, Kansas, and Nebraska it is going to the front as it never did before. If the new annual that A. I. Root talks about in his department is as good a producer of nectar as the two biennials and if that new annual can be grown in localities too hot for either of the biennials, we may expect a much larger percentage of sweet-clover honey.

When we look back to the days when we put out our first sweet-clover booklet, days when town councils and state legislatures tabooed sweet clover, days when even experiment stations gave it scant recognition, days when we were persecuted because we tried to spread the truth regarding this wonderful legume, we can only wonder that the transformation has taken place so rapidly as it has. There is scarcely an experiment station that does not extol the praises of sweet clover. It is endorsed by the Agricultural Department of Washington, D. C. Laws legislating it out of existence have been repealed and today some lands that won't produce hardly anything else are now producing sweet clover, fat cattle, and last but not least, milk and honey.

A GREAT voice has been still-ed; but those bright and breezy sayings from the Sage of Marengo, always labeled with smiles, will live after. Such a life can not die; but all that is earthly of Dr. C. C. Miller passed away on Sept. 4.

When he was obliged to give up his department of Stray Straws some months ago, on account of a severe sickness and his advanced age, there came a feeling over me that I must see him once more before he passed from the scenes of earth, feel his handshake, and see that face so beaming with smiles.

As I was scheduled to be present at a Chautauqua held at Madison, Wis., on Aug. 16 to 20, I decided that on my return I would pay Dr. Miller a visit between trains, during which I would take some more pictures of him; for I felt sure that the beekeeping world would want to see him in his ninetieth year. On arriving at the Chautauqua I told Dr. E. F. Phillips that I purposed to go and see the man who wrote Stray Straws, and asked him if it would not be possible for him and Mr. Demuth to go along with me. Precisely that thought was in the minds of both of these men, and we were not long in making up a little party to motor from Madison to Marengo. This party was made up of Dr. E. F. Phillips, Geo. S. Demuth, H. F. Wilson, and the writer.

We had expected to see Dr. Miller showing his age, and that the once virile face and form would be infirm with years; but we were agreeably surprised to see apparently the same man with the same vigor of body and mind that I had seen 35 years ago. He seemed to be at his very best, and members of our party all agreed that his mind was as alert and keen as ever. I think the average person would have said that he was not over 70, and probably along in his 60's.

But that wonderful smile that betokened the happy nature within must have camouflaged whatever of bodily infirmity there might have been. And surely there was some, because he died just two weeks to a day after our visit. I said, "Doctor, I'd give 20 cents for a picture or two of you;" and instantly he came back with a laugh, saying: "Beg pardon. I'll have to charge you 35 cents this year." At this the camera clicked, and the result is shown on the cover page of this Gleanings.

I had told him I had come to convey the best wishes of my dear old father, and it gave me pleasure to tell the Doctor of the joy that his letter (published on page 624 of this issue) gave to A. I. Root. I further added that father wanted to pay

DR. C. C. MILLER

Personal Reminiscences of the Editor, who had Known him for Nearly Forty Years

By E. R. Root

him a visit, and hoped that he might yet do so. I shall never forget how that smile seemed to fade a little, and then how it came back with its wonted

sweetness in these words:

"I should dearly love to see your father again, for he and I are about the only ones left of the old group. But tell him he must come soon, as sometimes I think I have not many days to live. If I do not see him on this side, I surely shall on the other side."

As he said that, the camera clicked again.

I took of him that day some two or three dozen pictures, and in future issues I hope to show more of them, as it will take a good many pictures to show the many sides of this wonderful man.

At this time I wish to give a few personal reminiscences, beginning with the time I made my initial bow to the beekeepers in the early 80's, or about the time that my father's health broke down and his editorial mantle was thrown on me. It was at that time I needed the help both of my father and of Dr. Miller. I needed Dr. Miller because father's enthusiasm was fast drifting toward gardening and green-houses and other like pursuits; but not so with Dr. Miller. I remember how, after I had come back from a trip among the beekeepers of New York, I thought I had gathered some new ideas. I had felt that the hives and appliances we were then making would have to be modified to fit commercial beekeeping not only on a large but on a small scale. For example, I became satisfied that father's beveled edge of the Simplicity hive and the metal-corner frame would have to give way to the square edge and the all-wood frames that were then coming into use. Naturally father was conservative. To settle the question we agreed to call in Dr. Miller. To make a long story short, the dovetailed hive was first launched on the market in 1889. Slowly it crowded out all its competitors until it is now the standard of all the hive-manufacturers in the country.

In those early days I needed Dr. Miller's help again in launching the thick-top frame. In fact, Dr. Miller had proposed it to me himself, saying that it was a great step forward, as it would effectually rid the hive of burr-comb, and it did. With Dr. Miller's support I put this in the catalog, and now the thick-top frame is in almost universal use among beekeepers.

About this time, also, I advocated self-spacing frames, and especially Hoffman frames. Here Dr. Miller expressed his doubts. He later came to see the value of the self-spacing feature in the form of nails as spacers; but he never really accepted the Hoffman frame, now in general use.

When the Porter bee-escape was first put on the market, Dr. Miller was again doubtful; but experience soon showed to him that it was a great invention for clearing bees from the supers.

During the time that the divisible-brood-chamber hives were being exploited in the 80's, I remember that Dr. Miller was skeptical, saying he doubted if the principle were correct. Mr. Heddon, Mr. Hutchinson, Mr. Taylor, and scores of other leading beekeepers at that time advocated the principle of handling hives rather than frames, and it certainly did look good; but Dr. Miller said to me privately: "You will do well, Ernest, not to push it," and we never did. The years that have gone by since then have proved that it was a step backward. It is not surprising, in the light of our present knowledge, that those who advocated and used this divisible-brood-chamber system of honey production had so many failures that they began to think that the seasons were to blame. They never seemed to think it could be the hive with its little force of bees.

Experience during the last 15 or 18 years has shown that, instead of dividing up a brood-nest, we should double them up and make strong, populous colonies. Dr. Miller, some 20 years ago, supported my contention that a good queen needs at least two eight-frame hive-bodies for breeding purposes. I advocated at the time a double brood-nest—not a brood-nest split in the middle or in halves, as advocated by Mr. Heddon. Just at the beginning of the honey flow, when running for comb honey, the plan was to reduce the breeding room to one-chamber, forcing all the bees into the supers. Dr. Miller made this a practice for years. He never had any trouble about getting bees into the supers, for the reason that he had the hive so "chock full," as he said, that they simply *had* to go into the sections. He was getting crops of honey right along when the users of divisible-brood-chambers were complaining of poor seasons one after another. Likewise, Dr. Miller always supported the Dadants in their advocacy of large brood-nests, or, as he used them, a double brood-nest of nearly the same capacity.

Dr. Miller was almost the first one to see that horizontal wiring, while it made beautiful flat combs, as smooth as boards, resulted in the foundation stretching near the top-bar, thus making the cells, when drawn out, too large for the queen to lay in. We therefore find him, some 20 years ago, advocating wood splints. While, possibly, this is not the best means to prevent stretching, it is a good one, and goes to show how Dr. Miller was looking forward, and how he was ahead of the times.

The grand old man of beedom never claimed to be an inventor. He never claimed he had any secrets, for he had none. His great service to the bee world was in discovering practical methods for

producing more and better honey with the appliances that the beekeeper has. He never was in favor of throwing away old hives or apparatus as was Mr. Heddon; and therefore one would never find anything in the Doctor's apiary but standard hives, standard Langstroth frames, and standard equipment sold by every supply dealer in the country. While he did not invent, he did pick out of the mass of crudities inventions that he approved.

I have just said that Dr. Miller did not pretend to be an inventor; but there are some things that bear his name—the Miller feeder, for instance; but he was generous enough to say that Mr. Warner improved it so that it was better than his own feeder. An introducing-cage also bears his name. This was not exactly an invention, but it was improved so that it is really a practical introducing-cage, one that is used very largely by queen-breeders.

There is hardly a standard article sold by manufacturers, now accepted by the beekeeping public today, that was not passed upon by Dr. Miller before it went on the market. For example, the eight and ten frame dovetailed hive was submitted to Dr. Miller at Medina before being introduced to the public. In fact, neither A. I. Root nor the other members of our organization thought it best to put anything on the market unless it had Dr. Miller's approval. In the same way brood-frames, self-spacing frames, bee-escapes, and introducing-cages were passed before the critical eyes of Dr. Miller. If he pronounced them good they went to the public. The fact that these things have been in use for 20 and even 30 years by practical beekeepers all over the United States shows how nearly Dr. Miller was right.

Let us now look a little further and see what Dr. Miller did in making bee culture safer and safer. Perhaps the biggest thing he ever did was to show to the world the real nature of European foul brood. He blazed the way in perfecting a new cure for that disease—a cure that is accepted today. E. W. Alexander furnished the basis for the treatment, and S. D. House, Camillus, N. Y., showed that the period of queenlessness could be reduced. He also showed that a resistant stock of Italians would go a long way in curing the disease and keeping it out of the apiary. But the ideas advanced above by Alexander and House were so revolutionary that there were but very few who took any stock in them. Only too well do I remember how I was criticised for publishing these "false" doctrines. But it was not until Dr. Miller had tried them out and had proved that they were along right lines that the beekeeping world began to take notice. The good Doctor went further than either Alexander or House in showing the true nature of the disease, and, possibly, how it spreads. When, therefore, Dr. Miller introduced these new methods of treat-

ment the whole of beedom turned right about face. Later work by Dr. Phillips and his assistants proved the soundness of Dr. Miller's views.

Dr. Miller, later on, developed, if he did not invent, a plan for uniting bees with a sheet of newspaper. The plan is very simple and effective. He moved the weaker of the two colonies to be united and placed it on top of the stronger one. Between the two stories was placed a sheet of newspaper (with or without a small hole punched in it). The bees would gradually unite thru this paper; and because the uniting was so gradual there would be no fighting and less returning of the moved bees to their old stand.

This little sketch would be incomplete, were I not to refer to a very predominant and dominant characteristic in Dr. Miller—that temperament or quality in his nature that makes the world delightful and everything lovely—so much so that it showed out not only in his face but in his writings. I think some of the happiest times of my life have been spent in Dr. Miller's home. Not only did he carry optimism thru the printed page, but we found it at the breakfast-table and all thru the day without a let-up. He went further. His conversation was one ripple of merriment thruout. He never ridiculed, but he could see the funny things of life, and sometimes I have come away from his table sore from laughter. He had the habit of taking one by conversational surprise, and would have him holding his sides almost before he knew it.

I said to him 30 years ago: "Doctor, I wish there were some way by which you might reproduce those breezy remarks you make at conventions and in your home—those little sidelines that are so helpful and yet seem like a drink of cold water on a hot day. Is it not possible that you could send Gleanings a page or two of short items of general comment each month? and I would suggest the name 'Kernels of Wheat,' as we already have a department, 'Heads of Grain.'"

He liked the idea; but for a title he suggested that "Stray Straws" would be much more appropriate. That would be more in line with his ability, he said. Our older and younger readers know how well he succeeded in giving us "Stray Straws". They were really kernels of wheat. Dr. Miller's paragraphs of five to a dozen lines were worth whole articles; and almost every one of those paragraphs was replete with smiles.

Years afterward, when I talked about the success of his department he said to me: "Ernest, all the credit belongs to you. You discovered how I might be able to give a little help to beekeepers, and I am certainly glad if I have succeeded."

Years ago at some of the conventions there was more or less strife; and well do I remember that Dr. Miller, in his quiet way, with a smile that was more persua-

sive than a policeman's club, would smooth out all the difficulties leaving a good feeling all around. In this respect he and Prof. Cook were without a peer. I remember one day he came to me, in the history of the National Beekeepers' Association, when there seemed to be a bitter fight on. He said to a group of us: "You have asked me to pour oil on the troubled waters. The job is too big for me, boys. But I will try my best if you will offer a prayer that only good may prevail"—and it did.

This brings me to another important side of Dr. Miller's character—an abiding faith in God. Come what might, with him all was well. There came a time when, thru some mismanagement on the part of others, he lost a considerable part of his savings. With a sweet spirit of resignation he wrote: "I have not lost all. I have my good wife and my sister. I have a few years of vigorous life left to me yet. I have in prospect a good crop of honey. The Lord has always taken care of me, and I am not worried over the future."

Dr. Miller would have been great in any line of work or profession. Had he stayed in music his fame would have gone over the world, I verily believe; and if he had kept on in the practice of medicine he would have advanced the profession materially. Even in the early days he said people did not need medicine so much as they needed common sense in treating their bodies. He gave up the practice of medicine because he said he did not believe much in giving medicine, and because he had to charge for his daily visitations; and, because his patients objected to paying his bills when he had given no medicine, he would go into something that was more congenial to him.

Let me tell you why I think Dr. Miller would have been great in the field of medicine, or, I should say, in healing. In his day medicine was considered as almost the sole reliance, but not so with Dr. Miller. Fifty years ago he believed that hygiene, plenty of water inside and out, rest, and temperance in eating, are far more important than drugs. Our best doctors today would testify that he was fifty years ahead of his time. The modern schools of medicine are advocating less drugs and more hygiene, plenty of good air and water. When Dr. Miller was going thru college he did not know that he could overwork, but soon found that he was burning the candle at both ends. He came out of college a full-fledged graduate with several hundred dollars to the good, but with health broken. All his life he had to be careful what he ate, as a consequence. He was obliged to keep from overeating as well as from overdoing. Many and many a time I have seen him at the table stop short. "I would like to eat that," he would say, but he would rigidly deny himself, and the result was that he kept himself active in mind and body. He was not only a great teacher but a great healer.

PERHAPS no one thing has thrown so much light on the laws of life and the conditions for continuous health as the post mortem examinations of the dead; and it has seemed to me there is no time so desirable to study the best conditions for wintering bees as in the spring, especially in a spring after a bad, hard winter when there have been heavy losses.

Winter Loss Due to Several Causes.

During the past winter and spring there has been in northern New England the largest per cent of loss, I believe, of any one year in the past 50 years. And now after a careful study of the whole subject, what do we find to be the cause?

So far as I have been able to make out, there was last winter a combination of three or four unfavorable conditions, any one, or in many cases any two, of which the bees would have withstood with little loss, but they were unable to withstand all of them at the same time.

Long Cold Winter and Poor Stores.

It matters little in what order these conditions are named, but I shall place them in this way:

- (1) An unusually long period of confinement, which is always a bad condition.
- (2) An unusually cold winter, one of the severest ever known, the thermometer some days not showing above 20° below zero at noon.
- (3) Poor quality of stores, and in many cases insufficient stores.

Where bees were short of stores they might have come thru all right had the winter been mild. Where the stores were of poor quality the bees might have lived, if they had had the usual chance of a winter flight. The long continued cold, with the consequent confinement, was not of itself sufficient to cause the serious loss sustained by many beekeepers, for we have found yards where the bees were supplied with good well-ripened clover honey or refined sugar syrup, and they wintered with little loss. One such yard of bees was left with summer entrances wide open, showing that it was not the cold alone that killed the bees. The owner said he did not put on his supers until the bees had stored enough for their winter supplies. Bees that were confined for four or five months in cellars having good stores wintered fairly well, but where they had poor stores and were even protected by a warm cellar, there was a large loss. I have wintered fairly well when the bees were fed on raw sugar, which shows that where bees can fly several times during winter poor stores alone are not

THE WINTERING PROBLEM

Three Authorities Discuss Winter Losses and Tell How the Beekeeper May Prepare Against Them

By J. E. Crane, Jay Smith, and O. L. Hershiser

altogether to blame for all the loss of bees last winter.

One very good beekeeper said he thought his bees had enough stores to last till spring when he

would feed them, and undoubtedly most of them had enough if the winter had been moderate; but it was not, and he lost heavily.

Some colonies in other yards lived till May and then starved from the carelessness of their owners to provide for their wants.

Weak Colonies, Queen Old or Missing.

Besides the above-mentioned causes for loss, we had the usual loss from queenlessness, very weak colonies, and the cluster's getting caught away from the stores, as is sometimes the case.

I noticed that colonies having young queens seemed to come thru better than those with older queens. Whether this greater vitality came from the bees' being reared from a young queen or because they were reared later in the season, I do not know, but probably the latter.

The wintering of bees in the north seems very much a question of endurance, and anything or everything that reduces their vitality lessens their chance of getting safely thru the winter.

Does Sugar Lessen Vitality?

Just here I stop to ask an interesting question.

Does the feeding of a considerable amount of sugar to a colony in the fall lessen their vitality? Or, to put it in another way, will a good colony having 30 pounds of good clover honey in the hive stand a better chance of wintering than one equally good that has ten pounds of good honey and is fed 20 pounds of thick sugar syrup? Will the storing of this syrup and inverting it so it will not crystallize reduce their vitality?

In a letter last winter from T. H. Elwood of New York, he stated that Capt. J. E. Hetherington, who was a close observer, believed that changing ordinary sugar to invert sugar, as bees do when fed, reduces their vitality. I have no way of proving this one way or the other, but if given my choice between two colonies of bees, one of which had stored 30 pounds of early clover honey, and the other 10 pounds and had been fed 20 pounds of best sugar, other qualities of the colonies being the same, I should not hesitate for one moment but take the one that had the early stored honey.

Quality of Stores Most Important.

We have been accustomed to think that good protection by careful packing of bees for winter's cold was the most important thing, but the experience of the past winter and spring has shown most conclusively that

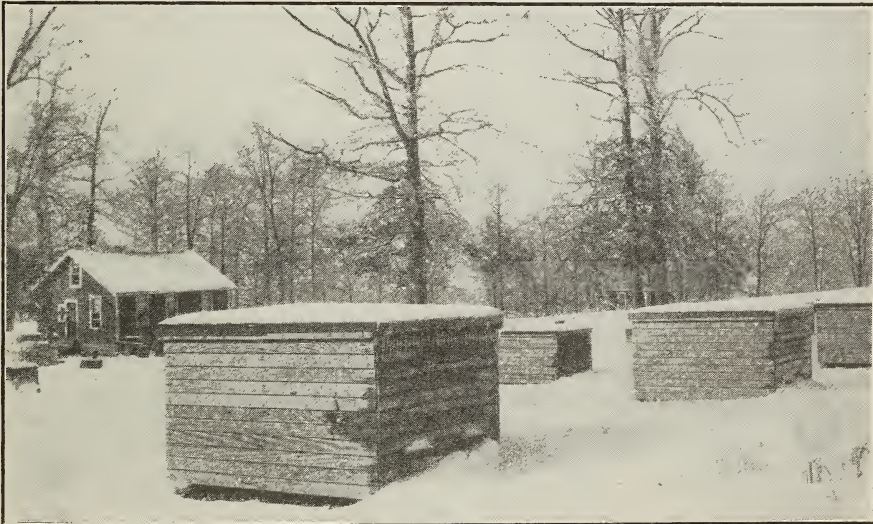
the quality of their stores is of equal, if not even greater importance.

I was greatly interested last winter in the Government apiary at Washington. Here the bees were packed in the most approved manner for outdoor wintering even for the far north. I was surprised to learn that there had been considerable loss; but was told that it came from the poor quality of stores gathered the previous season, and that all would have doubtless shared the same fate but for the introduction of young queens and careful packing. So we see that careful packing alone is not a complete safeguard against winter loss, but good stores and careful protection with young vigorous bees are of the utmost importance.

Middlebury, Vt.

J. E. Crane.

ally so with the quadruple winter case. Personally, even in this mild climate of southern Indiana, I consider that this bothersome job of packing is very profitable. I have been using the case advocated by Phillips and Demuth. Many have called attention to the importance of windbreaks. The trouble with trees and shrubbery for windbreaks is the fact that it also keeps out the breeze in the summer, which not only causes inconvenience to the beekeeper but wears out the bees by the excessive activity on their part in ventilating the hive. We should endeavor to save the vitality of the bees in the summer as well as in the winter. The principal injury done to the colony by the wind in the winter, I believe, is by either blowing into the entrance, or by blowing thru a poorly



The quadruple winter cases advocated by Jay Smith.

Wintering in Quadruple Case.

Four features are necessary to good beekeeping: First, a large brood-nest, either a Jumbo or a two-story eight or ten-frame hive. Second, a vigorous young Italian queen. Third, plenty of stores left with the bees. Honey, hive, and all should weigh around 100 pounds. Fourth, winter protection.

If we analyze the methods used by successful beekeepers, we shall find that the degree of success attained by them depends entirely upon how they put into practice the features mentioned in the above four (not fourteen) points. Many are having success and are practicing only three and some only two, but the ones who are considered top notchers are practicing the features in all four.

Quadruple Case.

Some consider that some of these features are too much bother. This is especi-

ally so with the quadruple winter case. I use fine sawdust, and when putting it in, it is thoroly tamped in. Last winter I kept a thermometer in the sawdust on the outside of the hive, and it registered close to 50 degrees most of the winter. Upon one occasion we had a high wind with the temperature ten above zero, yet the temperature in the sawdust dropped only two degrees. During zero weather the temperature just inside the entrance was always considerably above freezing. As might be expected, the bees come thru in fine shape and consume a surprisingly small amount of stores up to the time that brood-rearing begins in the spring.

Objection to Quadruple Cases.

The only objection I found to the quadruple cases was during a heavy sleet storm. The sleet completely covered the front of the cases, as shown in the cut, and sealed up the entrances air-tight.

This storm lasted a number of days, so I went around with the hammer and a spile and drove holes thru the ice to give the bees ventilation. However, the packed bees were not affected by the sleet any more than the unpacked ones, for the entrances to the hives were sealed up also. No especial harm was done, altho I believe it caused the colonies to become excited, and a few started brood-rearing prematurely; but, as it was in February, they continued brood-rearing right thru and no harm was done.

Value of Packing in Spring.

But it is in the early spring that I believe the packing does the most good in our locality. During the winter the temperature within the cluster is 57 degrees, while much of our weather is about 30 degrees. This leaves 27 degrees that the bees must overcome. In the spring the temperature within the cluster is 92 during brood-rearing, while the outside temperature at night is around 40 degrees, making 52 degrees that the bees must overcome as against 27 degrees in the winter. From this it will be seen that as far as the cluster is concerned the weather in the spring after brood-rearing has commenced is 25 degrees colder than it is in the winter. Hence the importance of plenty of protection in early spring. Added to this, is the fact that at that time the bees are fewest in number, a large area of brood must be kept warm, and on days when weather permits a large percentage of bees must be spared from the hive to gather pollen, water and nectar, which facts make the advantages of plenty of packing quite obvious. Some times during a cold day in early March when the wind was blowing and flurries of snow were scouting around among the winter cases, I would think the

bees must be freezing; but when I ran my hand down thru the dry sawdust and felt of the top of the hive, how warm and comfortable it was! I have frequently been surprised at the large amount of capped brood a hive contained in proportion to the number of bees in the hive. Properly insulated from the raw March weather, it is apparent that the bees can take care of twice the amount of brood that is possible with no protection.

Double Walled Hives.

Personally I have never used double-walled hives, but those in the neighborhood using them report that they winter much better than the single-walled hives. Vincennes, Ind. Jay Smith.

Wintering in New York.

Last winter and spring New York State beekeepers suffered very unusual losses of bees, due to various causes. In some cases there was loss by starvation, owing to the difficulty in obtaining sugar. Honey of poor quality for winter food was another cause of abnormally poor wintering, and this was aggravated by the long continued cold weather, making it impossible for bees to get a cleansing flight. Many bees that came thru the winter on inferior food were so reduced in vitality that spring dwindling resulted, and the spring loss seems to have been greater than that prior to the first of April.

Many colonies that survived were in poor condition, and numerous cases have come to my notice where the loss reached 100 per cent. There seems no doubt but that the loss thru the State amounted to 50 per cent, and more than that when the weakened condition of the colonies that survived is taken into account.

Kenmore, N. Y.

O. L. Hershisser.



MANITOBA enjoys (or otherwise) the severest climate of any civilized country, with the exception of central Siberia, and indeed even

central Siberia sometimes has to give points to Manitoba. Before January last winter we had nearly three months of "freeze-up", with quite a good percentage of below-zero temperatures, and great banks of snow six or eight feet high around our house after the middle of October.

Since the first bees were brought here from Ontario—not many years ago either—the problem of wintering has caused more failures, losses, and disappointments than anything else, and is so bound up in every

FAR NORTH AND FAR SOUTH

*Manitoba and Texas are Far Apart,
but the Winter Problem is Very Serious in Both Climates*

By H. W. Sanders and H. B. Parks

in bees and stores in the spring, ready to begin intensive brood-rearing during the short weeks before the first flowers begin to appear.

House-cellar.

There are two classes of house-cellar, those with furnaces in them, and those without. The furnace-heated basements are nearly all those of fully modern houses, built of concrete or masonry, warm and dry. The worst feature of them from the beekeeper's point of view is that the bees

apiary with success or failure in honey-getting that we cannot emphasize too often its importance, or lay too much stress on having our colonies strong

are kept too warm, and we know of several failures wherein the bees came out of their hives in thousands and died upon the cellar floor before the winter was over, leaving by spring mere nuclei or empty hives.

Where, however, a separate room can be partitioned off for the bees and provided with ventilation direct to the outside, colonies can be wintered with good success, and one beekeeper we know, W. G. Stanbridge of Winnipeg, has several times wintered 100 per cent in this way. His bee-room is bricked off from a large concrete basement with a furnace, and has a shutter giving direct access of fresh air. His experience agrees with our own, that the best temperature for a long winter is around 40 degrees, going rather under than over this figure.

Cellars without furnaces are rather hard to keep from freezing, unless they are "tight" from the outside winds and banked around to keep out the frost. Many farm cellars are made like this, and being deep and tight are used to store vegetables.

In the cases of which we have direct information of colonies' being wintered in such cellars, we hear that the method is successful even with 30 or 40 colonies. One would think the lack of ventilation would injure the bees, and that the daily visits to get potatoes, etc., would disturb them; but perhaps the fact that access is obtained thru a trapdoor in the kitchen floor, or down a stairway beneath the regular stairs, may result in giving ventilation thru the crevices of these doors.

At my home here we have 46 colonies in a "dug-out" that is not even concreted, the earth being held back by lumber. Around the place the earth dug from the cellar is banked to keep out the wind,

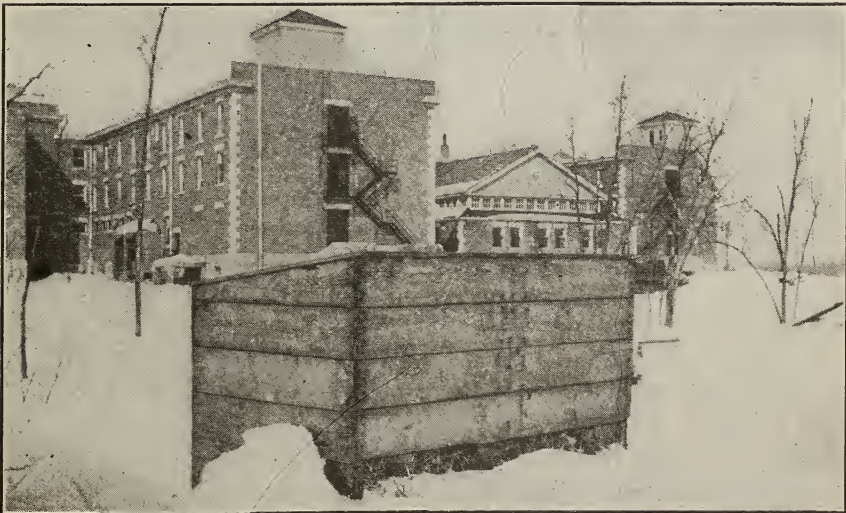


Interior of the cellar.

and we have a small stove that is lighted whenever the thermometer goes very far below 40. Ventilation is obtained thru a 3-inch pipe leading directly to the outside, but this is closed in very severe weather. In this simple way we have had good success for several winters.

Outside Cellars.

We have also a number of our colonies in the cellar, built outside by W. Pink of Sturgeon Creek. The accompanying picture will give some idea of this place,



Outside wintering experiment at Manitoba Agricultural College.

both inside and out. The outside cellar is about nine feet deep, wide enough for two rows of piled-up hives with a gangway between, and is ventilated by the shaft shown in the photo. This is six inches square and runs down to within a few inches of the cellar floor. Above the cellar proper is a roof covered with two feet of planer shavings (some unused bales can be seen on top), and this is protected by a second roof, covered with "rubberoid" roofing. So far the cellar is giving excellent results in spite of very cold weather. Mice are the worst prospective troubles we can think of.

W. J. Boughen of Valley River, Man., has a cellar beneath his garage and honey-house. This is built of concrete and is eight feet deep, with a separate entrance at the rear on the bank of the river. In the vestibule of the cellar he keeps his honey-tank, and runs the honey in by gravity from the extractor above, and in this vestibule he also keeps a cook-stove by

been less successful, possibly because undertaken without sufficient knowledge of the careful packing that is essential in so cold a climate. Many people have tried to winter bees in chicken-houses, barns, attics, etc., but with small success. Those who have persevered long enough to become real beekeepers have generally ended in wintering in a cellar, because that is the most satisfactory method.

Sturgis Creek, Manitoba. H. W. Sanders.

* * *

In Texas.

Texas is so spread out not only east, west, north, and south, but up and down as well that it is impossible to make a general statement relative to wintering bees. The statements given apply to the south central and southwestern parts only, as these are the commercial honey regions.

Winter Flights Decrease Stores.

Contrary to the belief of most beekeepers and of many who have never passed thru a southern Texas winter, wintering is



Outside bee cellar at Sturgeon Creek, Manitoba.

means of which he regulates the temperature and ventilation in the winter time. The floor has a sawdust packing between the joists.

Wintering in Clamps Outdoors.

W. J. Vickers of Kildonan has wintered 16 colonies successfully and without a single loss, by burying them in clamps in a sandy soil, with straw and earth covering. This is the only case of this form of wintering that has come to my notice, but I have heard of several attempts at outdoor wintering, with more or less of success.

The large case shown in the photo is the outdoor wintering experiment of winter before last at the Manitoba Agricultural College, of which the dormitories can be seen in the background. This was undertaken by R. M. Muckle, the Provincial Apiarist. Three out of the four colonies came thru safely.

Other attempts to winter outdoors have

a most important problem in Texas. By data given in an issue of *Gleanings* for this year, the winter loss in Texas for movable-frame hives was 15 per cent and for box hives much higher. The cause of this is a fairly warm, eccentric winter. It is not warm enough for nectar flows and yet warm enough for bees to fly. In one hive under observation during the winter of 1919-1920, bees flew every week. The mercury fell below the clustering point nine times in January and February. Thirty-six hours was about the longest period below the clustering point, and five hours the shortest. In all intervals between these nine low points, the bees flew freely. In late January and early February, bees were observed collecting pollen from mistletoe and spring beauty (*Claytonia virginica*), even tho the thermometer registered forty-five degrees Fahrenheit in the cluster of flowers. All this winter activity means the consumption of enor-

mous amounts of stores. A number of our most observant beekeepers say that these colonies used an average of 40 pounds of honey between Dec. 1 and Feb. 1.

Close Extracting Causes Shortage of Stores.

The cause for the large winter loss of last winter is easily seen on examining the records of the weather conditions of last fall and of the beekeepers' activities. In September, 1919, honey had a good price and was in demand. The hives had a good supply in them, and there was promise of an abundant honey flow. The beekeepers extracted very closely, expecting the bees to get winter stores from the fall flowers. It rained, however, and then rained some more. From Sept. 15 until Nov. 20 there was hardly a day during which a bee could work. Following this wet fall came the winter with its many periods of cold.

By Feb. 1, stores were exhausted and most of the beekeepers were feeding. Because of rains and the cold this feeding had to be kept up until April and in some places until June.

Lack of Room in Fall Causes Loss.

As late and too close extracting is the cause of much winter loss, the lack of room has been the means of losing many stands of bees in yards of good fall flow. It is a common practice here to extract about the middle of August and cut down the size of the hive to the brood-chamber. In many instances, especially in the fall of 1918, this resulted in the death of many colonies. These colonies had their quarters cut down to the brood-chamber in August. In September and October, there was a heavy flow from cotton and fall flowers, and, as a result, these bees so filled the brood-chamber with honey that there was no place to raise brood. In the

spring of 1919, these hives were still full of honey and had but few bees, and in many of them there was none.

Kinds of Winter Protection.

Several of our beekeepers have tried out various kinds of winter protection, the windbreak being the most popular. Some of these men report that the stores are used up in the protected colonies first. We cannot believe that this statement is correct. However, as no data are yet on hand relative to the results of winter packing, we make no statement.

A large number of our commercial bee-men are agreed on this point, that from the standpoint of economy the only winter packing necessary is to restrict the hive opening to one-half an inch by six inches and have in the hive, December 1, 40 pounds of honey for each one-story ten-frame hive and 90 for each two-story hive, as a two-story hive is supposed to contain over twice as many bees as a one-story.

The Situation in a Nutshell.

It will thus be seen that the wintering problem of the commercial beekeeping part of Texas is very complex and acute. Its solution requires much additional fall care of the colonies, a large amount of winter stores, and a very early spring inspection to find if feeding must be carried on. It is the belief of many that winter packing which will hold the temperature just above the clustering point will save bees but will require more stores, and that the only way to save the bees and the stores would be to put the colonies in refrigeration. This, of course, is out of the question, but we believe that the packing of bees in such a way that a uniform temperature of about 60 degrees F. is secured, is worthy of trial.

College Station, Tex.

H. B. Parks.



THE best cellar for this climate that I have yet seen is the kind used by E. L. Hofmann of Janesville. The one at his home apiary is 30x20x8 with cement walls and floor. The ceiling is made of boards loosely laid and on this ceiling is about two feet of clover chaff.

The sides and ends above the ground and the roof are of galvanized iron. The ceiling above mentioned is below

CELLAR WINTERING

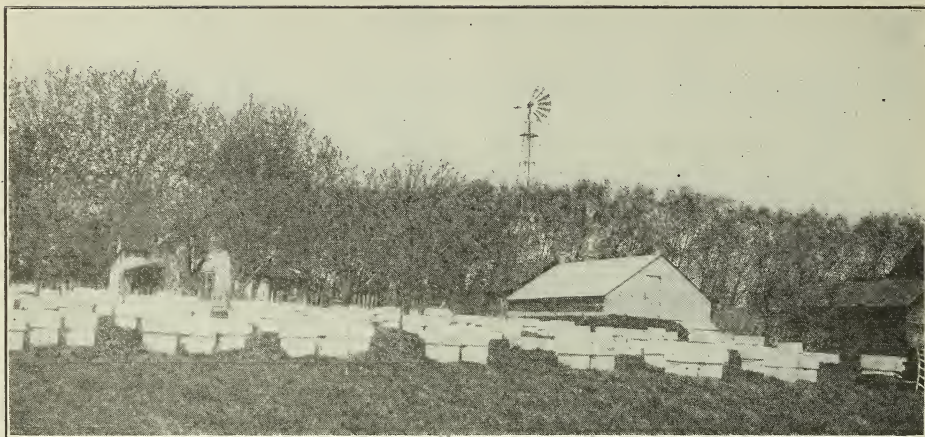
Description of Two Good Cellars and How to Winter in Them. Time of Putting in and Taking Out

By Chas. D. Blaker, J. C. Duff, and B. F. Kindig who
Quotes David Running, Ira Bartlett, and J. D. Robinson

(A half-dozen high authorities on cellar wintering have been ushered into this article and seated side by side in print, without conspiracy on our part to bring them together in a discussion of cellar wintering. They just happened along, all talking on the same subject, so we put them in company with each other, and allow our readers to hear what's said.—Editor.)

the frost line. The door is at the east end, and at one side of the door is the entrance of a sub-earth ventilator. The outlet pipe is at the west end and passes thru the roof. Mr. Hofmann gets practically 100 per cent results from this cellar, barring queenless colonies. A

honey-house may be built over this cellar leaving the clover-chaff packing between the ceiling of the cellar and the floor of



E. L. Hofmann's apiary, at Janesville, Wis.

the honey house. I understand that Mr. Hofmann is planning to do this.

Minneapolis, Minn. Chas. D. Blaker.

* * *

An Ontario Bee Cellar.

Since the cellar which we built in the fall of 1918 has given us good results, perhaps a short description might be appreciated by the readers of "Gleanings," who may be contemplating building one.

Construction of the Cellar.

It is built in the shape of a box car, and is entirely of cement except the doors and the storehouse above. It is frame and covered with prepared roofing. The inside dimensions of the cellar are thirty feet long, seven feet wide and six to six and a half feet high (the ceiling being arched to make it self supporting). As the ground is level, the cellar is built only halfway in the ground. The cellar wall is so built as to allow about

three feet of dry earth between it and the cement wall of the workshop, and the cellar is built high enough to allow one and one-half to two feet of planer shavings between the top of the cellar and the floor of the workshop.

The vestibule is made long enough to allow the inside door to open out and also give room for four steps. The outside door opens in, and is made of matched lumber, single ply. The inside door is also of matched lumber, but is double with low grade roofing between the two thicknesses of the door; both are tight-fitting.

A tile drain runs from the front of the door down both sides of the cellar just outside of the wall where it connects with the drain from the back of the cellar.

The intake ventilator is a four-inch tile running down the outside wall and entering the cellar at the floor beside the door. At the outside the opening is covered with wire



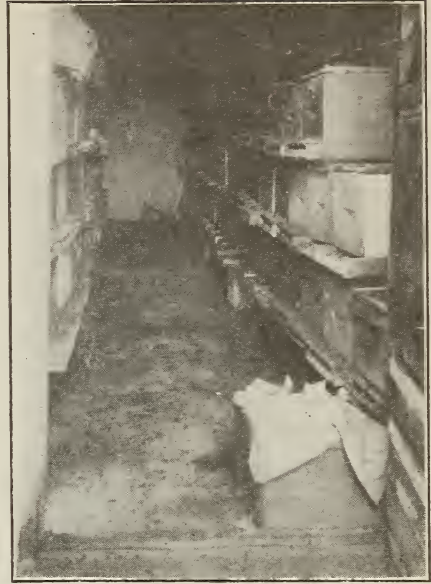
Outside view of E. L. Hofmann's bee cellar at Janesville, Wis.

screen to keep the mice out, and an old hive is turned over it. In cold weather the hive is covered with snow and we think that the air is tempered a considerable amount by being filtered thru the snow. The outlet ventilator is a six-inch tile in the ceiling at the opposite end of the cellar, to which is attached a galvanized pipe which runs up thru the storehouse to about three feet above the roof and is covered with a cap which prevents rain or snow getting in. There is usually a little drip from this pipe, caused by the moisture in the warm air coming in contact with the cold pipe, but this runs out thru the drain which is directly underneath, and gives no trouble.

Putting In and Taking Out.

In 1918 we put the bees on November 25 and took them out on Apr. 14. For experiment we took one colony out on Mar. 25 and put it in a sheltered corner in the yard; it came thru the cold weather, which happened later, in good condition. In 1919 we put the colonies in the cellar on Nov. 14, 15, 20, and took out a few on Mar. 31 and Apr. 1; the rest were taken out between Apr. 17 and 26. Our experience this spring would lead us to believe that there is nothing gained by taking them out too early, even if there are a few warm days. If the cellar was getting warm and the bees were restless, it would probably be advisable to set them out; but we have had no trouble that way, as they were just as quiet when we took them out as they were at any other time.

When setting the hives out we put on burlap and newspapers, shove the lid down tight, and close the entrance to a $\frac{3}{4}$ -inch auger hole, leaving all entrances this way

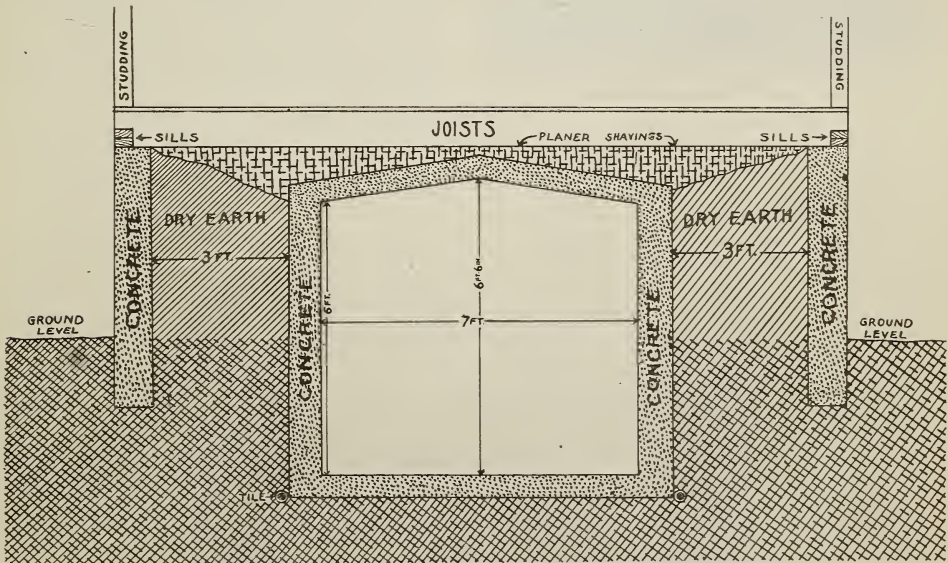


Inside of Mr. Duff's bee cellar.

till the weather gets warmer. With the small entrance we have had no trouble from drifting, even if the hives were not all put out on the same day.

Temperature of Cellar.

We kept the thermometer in the cellar both winters. The first winter we looked at it almost every day, and last winter we looked at it perhaps two or three times a month. It was usually kept on the bottom-

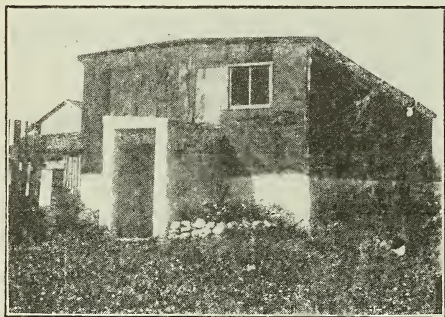


Duff's plan for building the bee cellar under his workshop.

board of the hive just outside the entrance and on one of the hives about the center of the cellar and about halfway between the floor and ceiling. The temperature varied between 47 degrees and 49 degrees Fahrenheit, but most of the time was 48 degrees. For a short time we kept it on the bottom-board of the hive inside just beside the cluster. The temperature there varied from 55 degrees to 58 degrees Fahrenheit. At no time did we see it at any other temperature than those given above, except once when we were moving the bees out in the spring. The doors had been open quite a while, and the temperature was 50 degrees or 51 degrees Fahrenheit. We might say that it was not an expensive thermometer, and that we did not test it except by putting it in a mixture of snow and water. Altho it registered 32 degrees in the snow and water it might not be absolutely correct at a higher temperature, as the bore of the tubes is liable to vary a little in cheap thermometers.

Arrangement of Hives in Cellar.

When putting the bees in we lay bricks on the floor and put 2 x 4's on top, then pile



Outside view of Mr. Duff's workshop with bee cellar beneath it.

the hives five high directly on top of each other. This size of cellar will hold 100 ten-frame Langstroth hives on each side; and by facing another row towards the back of the cellar it would be possible to put in 75 or more extra in the center, and still leave room for one to get to the back of the cellar.

We leave the entrances open full width and the feeder holes in the honey-boards open. We prefer honey-boards to burlap covers as the burlap is liable to get damp. We have had no trouble with the moisture's collecting on the walls, ceiling, or floor. In fact, you could light a match on them almost anywhere, except around the ventilator.

My Idea of a Good Cellar.

We think that a cellar should be long and narrow rather than square, as it gives more surface touching the ground, and for that reason it should be easier to keep an even temperature. We think also that it should

have a building or at least a roof over it, considerably larger than itself, rather than a mound of earth, as the earth, in this locality at least, would be sure to freeze solid, making the ceiling cold and thus causing the moisture to collect on it.

In our cellar, altho we have lost a few two-frame nuclei in which we were trying to carry over a few surplus queens, we have wintered colonies from a three-frame nucleus up to colonies of full strength, with practically no loss.

Tara, Ont.

J. C. Duff.

* * *

Time for Putting Bees in the Cellar.

The standard rule in this State for putting the bees in the cellar is immediately following the last good flight in November. We usually have a few fine days during the middle or latter part of the month when the bees get a cleansing flight. In April, 1920, Gleanings, C. W. Aeppler of Wisconsin says, "Bees had a flight in this latitude, in this part of the country, every year in the past ten years between the dates of Nov. 10 and 20, except in 1910." This may or may not be a fair average for the northern States. At any rate there are years when the bees do not have their customary opportunity for the late November flight. In these exceptional cases the beekeeper must answer quickly this question: Shall I put the bees in or shall I take the chances of further exposure to cold in the hope of fair weather later?

In order to answer the question satisfactorily, I addressed the question to each of several prominent Michigan beekeepers who practice cellar wintering. The replies of those who answered are as follows:

David Running, Filion, central Michigan:

"So far as wintering is concerned, if the cellar is properly constructed and the bees have fairly good stores, I do not think it makes much difference if the bees have not had a flight for two or three weeks prior to putting in, provided it has not been excessively cold during that time so that the bees have had to consume much stores and have been active to keep up temperature. Of course, the ideal time to put in would be just after they had their last good cleansing flight, but with good stores and a proper cellar they should be able to get along very well for five months without a flight. I have had them confined in the cellar for five months and four days without any serious trouble. I would rather have them in the cellar and miss several later chances for flight than to have them out until excessive cold weather would cause them to waste energy and stores, even tho they might have a good flight after the experience. Bees stop rearing brood here the latter part of September or early October. If they have had two or three weeks of quiet and then a good flight, nothing more is needed, altho a

later flight will do no harm and might do good."

* * *

Ira D. Bartlett, East Jordan, northern Michigan: "Here, when Nov. 10 to 20 arrives and we fail to get a bee flight, if threatening weather appears, we may get a foot or more of snow and some very severe weather, which would seem to be bad for bees outdoors. It may clear away and we may have some very nice weather in which the bees would fly, but I question the advisability of taking the chance. Last fall I put my bees in on Nov. 7 following a fair flight. Others left theirs out. Snow and cold followed and continued during the winter. They were forced to put theirs in because of the snow, and later theirs showed signs of dysentery while mine showed none. I feel that we cannot take the chance. I expect to place mine in the cellar by Nov. 15 this fall. I feel that on good stores they are safer."

* * *

J. D. Robinson, Levering, extreme northern Michigan: "Of course, everyone is agreed on the desirability of the bees having a good fly, but suppose they do not get one up to the middle of November! With us there is not one chance in ten that the bees can get one after that date. By that time we generally have snow that stays till spring. We feel very regretful if the bees do not get a good fly late in October or early in November; but, if they don't get it, it certainly does not help matters any to leave them out all winter on the very remote chance that they may possibly get a flight before spring. The opinion is growing on us that while early flights in the spring and late flights in the fall are very desirable, still a good colony with good stores in a good place will stand a pretty long confinement. We are inclined to the theory that the element of the kind of stores and the

kind of quarters is of more importance than an extra 30 or even 60 days' confinement."

* * *

The chief reason for desiring a good flight before placing the bees in the cellar is that the bees may rid themselves of the accumulations of undigested materials. If the bees have had a flight in early November or late October and no exceptionally severe weather is experienced for the next week or two, even if a favorable day comes the bees are often loath to take a good flight. The only conceivable reason for this is that they do not feel the need of it. The reason they do not feel the need of it is that they have lived on good pure food and have not used up an excessive amount of food in keeping the temperature at a comfortable point. Experience has shown that when the bees have consumed only pure food such as good white honey, it is not necessary for them to have another flight previous to placing them in the cellar. If they have a food containing much indigestible matter, a flight before placing them in the cellar would be more necessary. The question seems to resolve itself into one of food rather than of time.

An essential part of the preparation for winter by the wise beekeeper is the removal of the honey that is not fit for winter food and the substituting of a good grade of honey or sugar syrup. If this has been done, then it seems that the best beekeeping practice is to put the bees in the cellar when the time comes regardless of the time of their last flight. Mr. Aepler throws still more light on this important question when he shows that in his locality during the last 46 years there were only 8 opportunities for flight after Nov. 20. That must mean that the leaving out of bees after the proper time for placing them in the cellar has passed is a gamble with the chances almost six to one against the beekeeper.

East Lausing, Mich.

B. F. Kindig.



J. A. Lewis of Martinsville, Ind., winters his colonies on shelves under a long shed.



KEEP YOUR TRADE SUPPLIED

Even if You Have to Buy Honey from Other Beekeepers or Dealers

Some 20 years ago in Chicago, when I was engaged in the wholesale honey business rather extensively (handling five carloads in one year, and bottling three of the five cars), I sold a large quantity of honey, both in 60-pound cans and in barrels, to beekeepers in many parts of the country. I remember one live beekeeper in St. Paul who ordered and re-ordered continuously, to keep his honey customers supplied. He certainly knew his business, and didn't propose to allow his regular customers to go unsweetened as soon as his own crop of honey was all sold out.

Yes, I know there is some danger, when getting honey on the open market, that some foul-broody honey may be secured. But there is no good reason why plenty of honey cannot be had that was produced in disease-free apiaries.

I never could understand why those who produce more honey than their local market can well use, do not patronize the advertising columns of the bee papers, and thereby let their fellow beekeepers, who are soon sold out of honey, know just where they can get more to supply their demand.

By doing such advertising, it may be found that some beekeeper right in an adjoining county would be glad to buy the honey to take care of a growing trade. Also, such procedure will often result in getting a better price than to try to unload too much honey in one town, and thus cause it to become a drug (or drag) on the market. Beekeepers should wake up, and use a little gumption at the selling end of their business.

For many years I have contended, and still insist, that there has never been enough honey produced to supply a demand that might easily be created if a little effort were put forth by honey producers themselves. And now that sugar has gone away up in price, it is just the time for beekeepers to get busy and push the sale of honey, which is a much better sweet than sugar, but the general public doesn't know this, and so they go on neglecting honey as a food. So it is up to the honey producers to educate the consuming public concerning the value of honey as a daily food. If the beekeepers don't do this, it never will be done.

It would seem to me that this is a sufficiently vital subject to merit some discussion in the bee papers. The selling end of the honey business has been neglected all too long. There certainly are ways of disposing of the honey crops so they shall be

more evenly distributed over the country, and thus insure better, or more profitable prices to the producers. It seems to be the unfortunate lot of the producers along all agricultural lines to be working for less pay or profit than those who make a business of simply handling the products of the farm. No doubt some middlemen are needed, but there is no good excuse or reason for a horde of them attempting to exist as they do, when half as many or less could handle the business. Let the other half get out in the country and help produce something, rather than be the parasites that a good many of them are. Unless more people do get out on the land and help produce food, there is going to be some enforced starvation among certain classes in the not far distant future. And that means that many innocent and helpless children will not get the food they should have.

But I am wandering from my subject. Let every beekeeper see to it that his home trade is always supplied with honey. If his own crop does not reach, then by all means buy some honey from other beekeepers or dealers, and keep the people sweet! It will pay to do this, not only in dollars and cents, but also in the consciousness of having done a commendable work in the interest of humanity.

George W. York.

Spokane, Wash.

SUBJECTS TO AVOID

When a Beekeeper is Selling His Honey in Person at Retail

Inasmuch as no one can be well versed in many subjects, and that of bees and honey being one which is little understood by the average person, and concerning which there are so many false impressions, it would seem to be the part of prudence for the man who purchases and "peddles" his own honey to bear in mind that there are certain points which it is well to emphasize, and others on which the least said the better.

All of us have been asked such questions as, "How do you get that little box around the cake of honey without mashing the comb?" "Do you feed your bees glucose or sugar?" "Do the bees ever get out of their hive and sting you?" And so on indefinitely. If the questioners are used to a local amber honey, they will solemnly claim that a lighter honey is glucose, because it is nearly that color; or that some other honey has been "doped" because it "gets sugary." That is when explanations are in order.

If they are referring to the product of some competitor, it would, of course, be easy to refrain from explanations, by silence

FROM THE FIELD OF EXPERIENCE

agreeing that they are right, and dwelling largely on the virtues of your own honey, which, aside from any moral standpoint, would be poor policy. "Knocking" one's competitor never did any one permanent good. The ethics of beekeeping should prompt us to offer to gamble on the purity of our competitor's honey in such cases, provided it is represented by him to be so (even if gambling, perhaps, isn't ethical). Your competitor may be broad enough to do the same—not that the writer advocates a policy of "scratching each other's back," so to speak, but it precludes further spread of a false impression.

It also seems to be a mistake to speak to the layman of feeding bees sugar for winter stores. No amount of explaining will quite convince him that he isn't being asked to pay 40 cents a pound for some of that sugar.

Another subject which, in such cases, it would seem better not to bring up unnecessarily is that of bee diseases. Foul brood, paralysis, dysentery, etc., sound "simply awful" to unaccustomed ears, and mention of them had better be reserved for discussion in company where they are better understood; otherwise they do not tend to create an appetite for our product.

A. G. Van Ronzelen.

St. Louis, Mo.

THIS YEAR'S HONEY CROP

The Amount of Honey Obtained in New York and its Probable Price

It has been noted by some that a good honey season follows heavy winter losses, but this season has proved an exception in many localities. In beekeeping as well as

in other occupations there are always some important "ifs" to be taken into consideration, and, in this case, if the dry weather of last season had not occurred and killed much of the young clover and if we had not had a cold spring that held back brood-rearing and if we had not had very dry weather during the spring and early summer just when we needed the moisture to develop the clover that survived the drouth of last season and if no other "ifs" intervened, we would have had the expected good honey crops from the bees that survived. As it happens, a very poor honey season is the lot of the beekeepers in western New York except where local rains last summer saved the clover. However, in some localities in the State the crop has been normal, notably in central New York.

The prospects for late summer and fall honey are good. Since the first of July there has been a good growing season, and all fall flowers, such as goldenrod and aster, as well as buckwheat, of which the usual acreage has been sown, are in unusually good condition.

Besides the conditions above noted that prevented a good crop of clover honey, the quantity that will be available for market will be curtailed, owing to the activity of beekeepers in making up their winter losses of bees. Increases in excess of 100% are common, and this will consume a large quantity of honey that otherwise would be available for market.

In such localities as have a poor crop all honey produced will be consumed locally, and good prices will be obtained without difficulty. Where the amount of honey produced is in excess of local needs, of course the prices ruling thruout the coun-



The snow was deep in Thos. Martin's apiary at Wanstead, Ontario.

FROM THE FIELD OF EXPERIENCE

try will prevail, and these seem to be about the same as ruled last year.

At the annual field meeting of the New York Association of Beekeepers' Societies the crop committee recommended minimum prices as follows:

60-lb. cans	\$15.75 each,	2 or more	\$15.00 each;
10-lb. pails	3.25 each,	2 or more	36.00 doz;
5-lb. pails	1.75 each,	.....	18.00 doz;
1-qt. jars	1.25 each,	.....	12.00 doz;
1-pt. jars	.70 each,	.....	6.60 doz;
1-lb. jar	.50 each,	.....	4.60 doz;
8-oz. jar	.32 each,	.....	3.00 doz;
fancy comb	.50 each,	.....	9.50 case;
No. 1 comb	.45 each,	.....	8.75 case;
dark honey 5c a pound less.			

A discount of 15% to be given where a job lot is taken.

The prices recommended by the Western New York Honey Producers' Association are the same except the discount on job lots.

Beekeepers are coming more and more to comparing the price of honey with that of other foods and commodities and endeavoring to maintain prices that bear a just and reasonable comparison, which shows that beekeeping is on a sound foundation.

Kenmore, N. Y.

O. L. Hershiser.

NOT A LOSS IN SEVEN YEARS

In Colonies Packed with Shavings in Single Cases

Last year my 150 colonies were packed with shavings in quadruple, double, and single cases. The single cases hold their seven years' record of never a failure.

The double cases were apparently a little ahead of the quadruple last year. A 3-inch case covered on all sides with asphalt roofing does not seem as good as those not so covered. Bees in the quadruple cases facing east and west drifted badly. The snow was of no benefit, as shown by the fact that some of the weakest colonies were entirely buried, while some that had no snow around them came thru in first-class condition. Cases are all clear of the ground and have three inches of packing underneath, but I never saw so much mould and dead bees on the bottom as I found this last spring, even where no snow blocked the entrances.

Natural stores were apparently all granulated; sugar syrup was not. Four-fifths of the stores being sugar syrup accounts for my having 145 colonies alive in the spring, while those who allowed their bees to winter on last year's honey are heavy losers because of the granulation of the honey.

For good wintering I prefer young queens. I have no queens over two years old and I find that the majority of the weak colonies have two-year-old queens.

Wanstead, Ont.

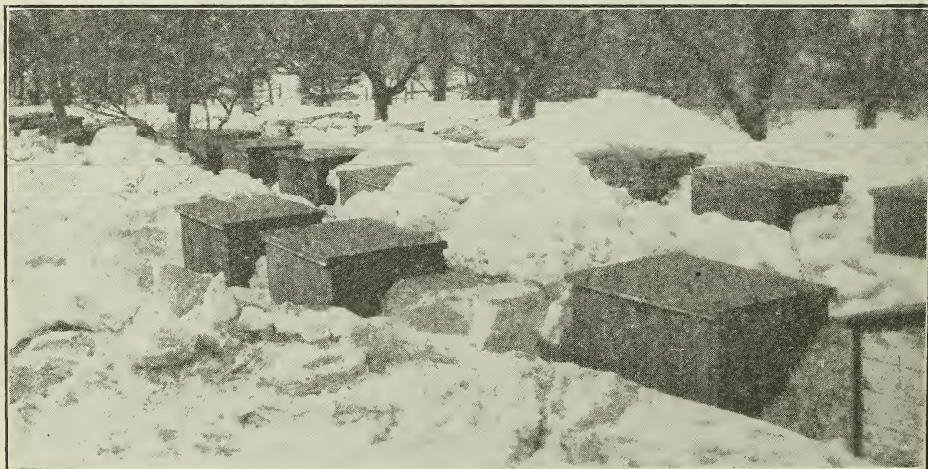
Thomas Martin.

BLAKER ANSWERS CRITICISM

Why Mr. Cox Failed in Applying the Deadman Plan of Cleaning Sections

Two years ago I tried on a small scale a plan similar to the Deadman plan, described in August Gleanings, for getting unfinished sections cleaned up.

I selected a strong colony, put on a super



Thos. Martin's winter cases doing duty.

FROM THE FIELD OF EXPERIENCE

with inch starters in the sections, put a bottom-board close to the side of the hive on which I piled, four high, the supers of unfinished sections and closed the entrance to the super from the outside. Then I took a piece of 2x4 scantling as long as the width of the two hives, hollowed out a groove on one side after the fashion of the Alexander feeder, and put it under the back end of hive and supers so the bees could pass freely back and forth between the hive and the supers.

For a short time the bees went for the unfinished sections like robbers, but as soon as they found they had it all to themselves they cooled down and refused to uncap anything that was capped over. I took away two of the supers so I could get at the other two and uncapped the cells and took out the sections as they were emptied and put in others, all the time watching the super above the colony to see that the bees had room to store the honey. In that way I forced about 100 pounds of nice, clear honey on to them, but it took a month to do it. By that time the nights were getting too cool for comb-building.

When I took off the super I had some more unfinished sections—about 20 pounds of honey in a 32-section super. What the bees did with about 80 pounds of that fed-back honey I will never tell you.

The plan looks so good in theory that I may try it again, but in practice it was a failure.

If I try it again I would use unfinished sections above the colony, but in that case we would get patched-up and unsightly sections.

Oakland, Ill.

William Cox.

(Reply to William Cox)

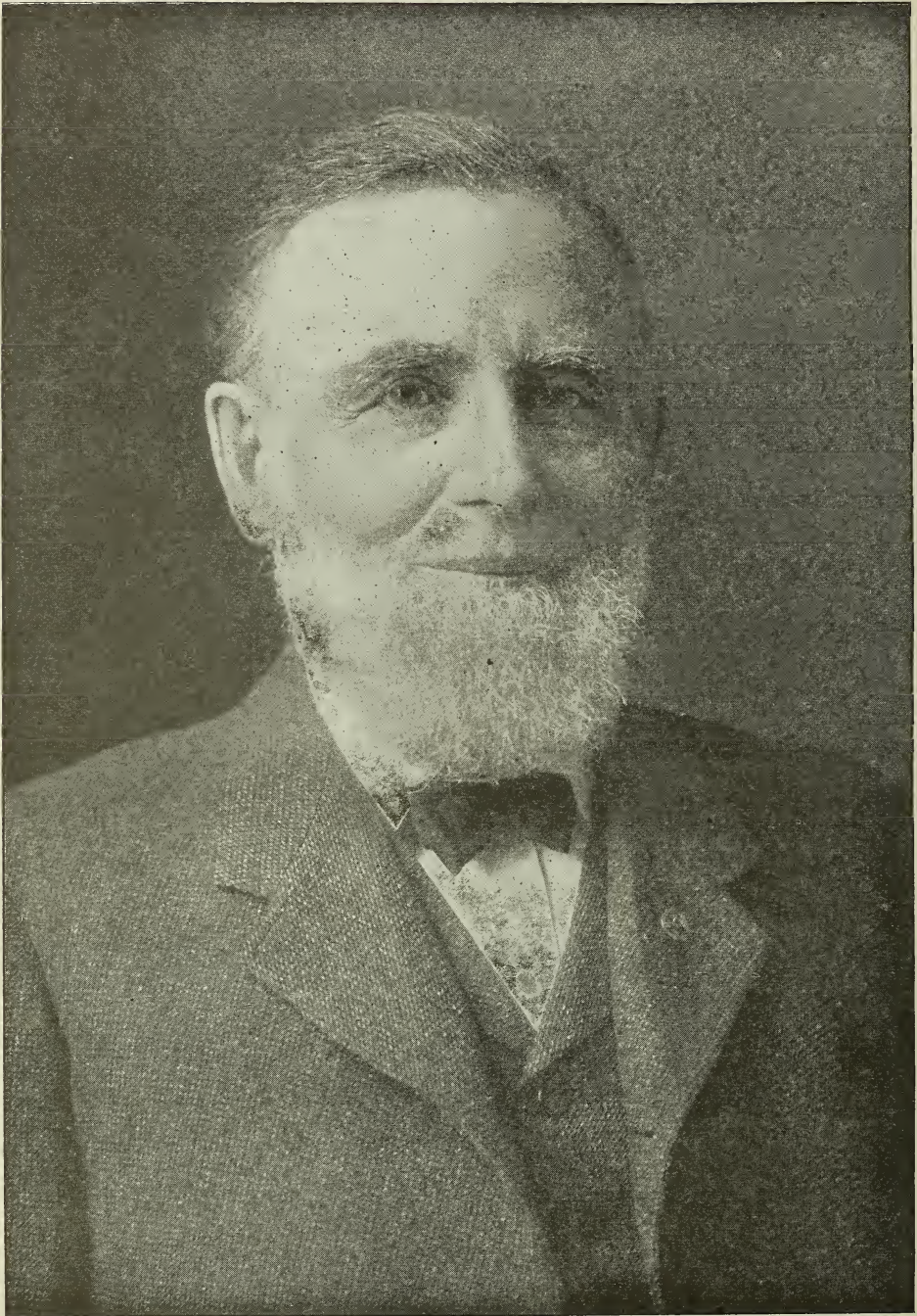
I am not at all surprised that Mr. Cox failed in what he tried to do, but I am

surprised that he should blame the Deadman plan for his failure. He says that if he tries it again he will use unfinished sections. Well, that is exactly what Mr. Deadman says to do in the instructions which he gives in *Gleanings* for July 15, 1916. He also says in this connection that "sections that are capped or partly capped, but very thin, should be uncapped. Otherwise the bees may build over the cappings, or back of them, making an irregular surface." If those instructions are followed the "patched-up and unsightly sections," to which Mr. Cox refers, will be avoided. Mr. Cox failed because he used starters in the supers above the colony. And he also failed in having the unfinished sections cleaned up, which he placed on the Deadman board by the side or back of the colony, because he did not follow instructions in that regard. In the article above referred to, Mr. Deadman plainly says that one should first uncap any sections that may be capped. But I especially recommend this plan to those who are producing extracted honey. First, because it does not stir up the whole apiary, as when distributing the wet combs among all the colonies. Again, one can leave the combs with the "clean-up" colonies until late in the fall and thus have them protected from moths until it is time to store them away in the honey-house. And last, but not least, it will lessen the danger of the spread of foul brood thruout the apiary in case a colony has brought in infected honey from a neighboring apiary. Now I am very sure that if Mr. Cox will carefully follow Mr. Deadman's instructions he will not say that the plan "in practice was a failure."

Minneapolis, Minn. Chas. D. Blaker.



Wisconsin beekeepers at their Chautauqua held at Madison, Aug. 16-20, 1920. The big tent shown in the rear of this group served as the assembly hall. This Chautauqua proved a great success.



Author of "Stray Straws" from December, 1890, to December, 1919.

DR. C. C. MILLER, the beloved friend of all beekeepers, died in his ninetieth year, Sept. 4, 1920, after a final illness of five days. There was no dimming of his person-

ality during the later years of his life. Until the very last he remained at his best, ever alert, genial, full of enthusiasm, always radiating a great-hearted love that

embraced all nature and all mankind. Dr. Miller's life was one of the richest blessings of the beekeeping world, and his writings will be a most prized inheritance for years to come.

Early Life.

Dr. Miller was born of English and German parentage in a country home at Ligonier, Pa., June 10, 1831, and here he spent his boyhood days, enjoying life to the full. The country surrounding his home was beautiful, and awakened in him that great love of nature that was so characteristic thruout his life. At the age of ten years he lost his father, whom he greatly loved and revered. In his writings he has characterized him as "most lovable in character," and has stated that thruout his life he has been influenced by the desire to be as good a man as his father.

His Education.

By working in a country store two years at \$24 and \$50 per year Dr. Miller obtained enough to go to the village academy. He was then obliged to teach before taking up his college work at Jefferson College, Cannonsburg, and Union College, Schenectady, N. Y. By rigid economy, boarding himself at 35 cents a week and doing any honest work from ornamental penmanship to peddling from house to house, he completed his course, taking at graduation the highest honor, Phi Beta Kappa.

A Physician.

After one term of teaching in Genesee Academy, N. Y., he studied medicine at Johnstown, Pa., and attended lectures in Michigan University. He received his M. D. degree, and for a year practiced medicine in Earlville and Marengo, Ill.; but he was not happy in the work. His health was not rugged enough to stand the strain, and he was so vitally concerned that each patient should show immediate improvement under his care that the responsibility of his profession proved too great, and he was obliged to take up other employment.

Music and Teaching.

At the age of 26 Dr. Miller married Mrs. Helen M. White. A few years were spent in teaching vocal and instrumental music, and a few years as principal in the Marengo public schools.

In 1870 and 1871 he traveled for the music house of Root & Cady. In 1872 he spent six months as official agent in starting the first of the May musical festivals under Theodore Thomas at Cincinnati. The three following years he worked for the Mason & Hamlin Organ Co. at Chicago, his wife and little boy leaving the farm and spending their winters with him. During the summer months, when they were not with him, however, visions of the country continually haunted him, making the city appear desolate indeed; and so in 1876, in spite of an offer of \$2500 and expenses, he left the city and took a school at Marengo at \$1200.

His Beginning with Bees.

Altho Dr. Miller when a boy had taken a little interest in a colony of bees that his father kept in a barrel, still he had given bees but little thought until 1861, when his wife captured a runaway swarm and hived it in a barrel. This colony the first year stored 93 pounds besides teaching Dr. Miller a great deal about bees. Eight years later he saw a copy of the American Bee Journal, and among other interesting writers he found the name of A. I. Root, whom he visited at Medina the following year. For the first nine years but little increase was made; but in 1876, when he gave up his city work and returned to the country, he had 99 colonies. From this time on he made beekeeping his business.

In the spring of 1880 his wife died, and in the fall of 1881 he married Miss Sidney Jane Wilson. Her sister, Miss Emma M. Wilson, was his main assistant in the apiary after that time up to his death.

Some remarkably good honey crops were secured by Dr. Miller. The best record was an average of 266.74 sections from 72 colonies, and his best colony that year produced 402 sections.

His Writings.

It is doubtful whether any one else was ever as well informed in beekeeping literature as was Dr. Miller. He always attempted to read all the journals on beekeeping, even those in German and French. His own experience, thus backed by the experience of others, made him an exceptional writer. Moreover, his wit, tact, and un-failing good humor endeared him to the hearts of his readers.

Dr. Miller was always at his very best when assailing another's position on any given subject or when defending his own. For this reason he was prevailed upon in 1890 to contribute the department "Stray Straws" for Gleanings in Bee Culture. This department was continued without interruption until last November, when failing health made less work imperative. Since 1894 he has conducted "Dr. Miller's Answers" in the American Bee Journal. The separate articles, also, that he contributed to the different journals from time to time were always valuable and right to the point. His "Fifty Years Among the Bees" has been an exceedingly popular book.

Love of Nature and God.

As Dr. Miller said, he might easily have amassed more money in some other line of work; but in so doing he certainly could not have taken the enjoyment that he had in his quiet country home among his flowers and his bees.

Dr. Miller was a life-long member of the Presbyterian Church. To him the spiritual life was all very real. He not only believed in it but he lived it, as was testified by every act of his splendid life and by every feature of his wonderfully expressive face.

VITAMINES
in Honey!
Hurrah! But
hold on a mo-
ment: it does
not appear to be
in the extracted
honey but in
comb honey, and
we have always

been told that wax is indigestible, that even sulphuric acid can not dissolve it. And now comes the news that rats on a starvation diet can get enough vitamins out of comb honey to thrive. How many theories, supposed to be true have been proved by the lime light of scientific investigation to be defective, or only in part true! But I have been wondering since reading Mrs. Puerden's account of vitamins, whether the clear honey used in these investigations was not bottled honey that had been sterilized to prevent granulation, which might be the cause of finding few or no vitamins in honey without the comb.

* * *

Dr. Miller's plan for the prevention of after-swarms, page 534, is simple and effective, and would, I believe, in most sections prove entirely satisfactory. But why have first swarms? We bought last spring 30 colonies in odd-sized hives just for increase. As fast as a colony became strong enough, I would shake the bees into a new hive and place the hive of brood-combs in the place of another strong colony. As soon as the colony that had been moved to make room for the one I had shaken, was strong enough I would shake it and place it on the stand of another hive, usually one that had been shaken before. By this method swarming has been almost wholly eliminated, only one swarm issuing. The colonies nearly doubled, with honey enough for winter in most of them and considerable surplus from new colonies. This method is not, I believe, new, but proves to be one of the simplest and easiest I have ever tried. I can usually shake a swarm from their combs much quicker than hive the average swarm.

* * *

That field of annual sweet clover certainly makes a great show on page 560. "Well," I said to myself, "it may grow like that in the far western soils, but not here in Vermont;" for I had sent for some of the seed after reading what was said of it in the June number of Gleanings and was surprised at its small growth during June and July. Not having seen it for some time I thought I would go and look at it before throwing stones or saying anything to discredit it, when to my great surprise I found it on the last of August breast-high or over four feet by actual measurement and well branched and beginning to bloom. It was sown June 10, and on July 10 had made but little growth; but



during August had spread itself like a green bay tree. It is doubtful if it matures seed, but I can see what it is like. It seems to grow by the rule of

geometrical progression.

* * *

Cheer up, brother and sister beekeepers! for we are told on page 522 that "there never was a time in the history of beedom when the future looked brighter for the beekeeper than now"—and this in spite of foul brood, winter losses, the high cost of supplies, and all the other vexations attending our pursuit. It was indeed something of a surprise to be told that the bottling of honey has developed more than 1,000 per cent in the last few years. That is going some. But when I read on page 542 how one beekeeper in southern California produced 74,000 pounds from 280 colonies, it looks as tho it would require a good many bottles to take all that is produced.

* * *

That editorial beginning on page 521, "Good Honey Versus Sugar for Winter Food," is well worth reading several times by every young beekeeper and some old ones. We have usually had very fair success with sugar stores for winter, but after watching carefully for the last few years I am more and more satisfied there is nothing better for winter stores than early clover honey. While sugar syrup is often cheaper than honey, it costs a good deal of time and money to feed a thousand colonies, the most of them from three to twelve miles from home. And the loss of the vitality of the bees in storing and ripening 15 or 20 pounds of sugar syrup in the fall when they should be kept as quiet as possible, is no small item, for it shortens their lives just that amount in the spring.

* * *

That short sketch (page 530) of the life of Prof. Emilio Schenk is of unusual interest. We have those in this country who go out to teach beekeeping, but their expenses are paid, with a good salary besides. But here is a man that gives his time and traveling expenses for the good he may do. Evidently he has not neglected his family, for that picture (page 530) is one of the very choicest I have seen in many a day. I hope we may hear from him and catch something of his spirit, for it seems to be the spirit of the Master.

* * *

The Vermont beekeepers held a picnic or field day at the home of Geo. C. Spencer near Lake Champlain in Addison County on Aug. 25. There was a large and enthusiastic attendance. Mr. Selser of Philadelphia was present and added much to the interest of the occasion.

IN the past three years many stories of the beneficial effects of honey in the diet have appeared on this page; reports of individuals who could digest honey when they could take no other form of sweet without suffering indigestion, and stories of others who believed their gain in health and strength had been due to the use of honey. There was even one story of a prominent business man, suffering from a severe case of mal-nutrition, who, by the use of an almost exclusive honey diet, built up in weight from 90 odd pounds to 160 pounds and vigorous health, after his physician had tried in vain to find a diet which would agree with him.

In telling all these various stories I have always made it a point not to exaggerate them in the slightest, and in nearly every instance have put the case for honey less strong than it was told to me. Altho an enthusiastic believer in honey I know that our minds have a wonderful influence over our bodies, and that some of these beneficial effects must be attributed to the fact that the individuals who ate the honey had faith that it would benefit them, and it therefore did.

I might add that after the publication of any of these honey articles I almost invariably receive letters telling of similar cases known to the writers.

WHILE we beekeepers and honey lovers have no doubts as to the value of honey as a food, yet it is a fine thing for the industry to have a nutrition expert of the highest authority corroborate our belief. That nutrition expert is Philip B. Hawk, who occupies the chair of the Department of Physiological Chemistry and Toxicology of Jefferson Medical College, Philadelphia. He has conducted much research work as to the digestibility of various foods as well as exhaustive feeding experiments upon animals to determine the presence or absence of vitamins in certain foods, and he is well known to the general public by his series of articles in the Ladies' Home Journal on digestion, and later on vitamins. He is also a frequent contributor to the best scientific journals.

There are any number of nutrition experts who are just as able as Philip B. Hawk, but I doubt if any of them are so well known to the lay public of this country, a fact which makes his statements especially valuable for reference.

LAST month I wrote about his finding the vitamin water-soluble B in extracted honey and the vitamin fat-soluble A in comb honey, and this month I am going to tell you briefly of his ex-

OUR FOOD PAGE

Stancy Puerden

periments as to the digestibility of honey, and then tell you more about vitamins.

The experiments were carried out upon a normal man to

determine the influence of honey upon gastric digestion. He was first given 40 grams of whole wheat bread alone. The contents of the stomach were analyzed for acid and pepsin at 15-minute intervals and an accurate and detailed record was kept. The experiment was then repeated, adding to the bread half its weight in honey (20 grams).

The following quotation tells the results in Prof. Hawk's own words: "An examination of the chart will show that the bread with honey was digested and left the stomach as quickly as the bread alone. Similar pepsin values were obtained, and while there was a slight depression of acidity such as always follows the ingestion of foods containing much sugar, digestion was completed as soon as with the bread alone, altho the addition of the honey had practically doubled the food value of the product from the energy standpoint.

"The use of honey with bread and in similar ways would, therefore, appear to be generally preferable in the case of children to the eating of candies. Honey serves to make the highly nutritious bread far more palatable, leading to a greater consumption of body-building foods instead of depressing the appetite, as is likely to be the case with candies which are eaten between meals. At the same time honey furnishes the body very considerable amounts of energy in the most available form. The high place given to it in the diet is therefore well deserved."

In quoting the above from Prof. Hawk we should always couple it with his statement, published in the September Gleanings, that comb honey contains distinct amounts of the fat-soluble vitamin. You will remember that he said honey added to the diet of white rats, which were being starved of the fat-soluble vitamin, produced the same effects as 5 per cent of butter fat, the latter being the richest known source of fat-soluble A. Remember also that his experiments indicated that that there are small amounts of the water-soluble B vitamin in extracted honey. Therefore when we give a child bread spread with comb honey we are not only increasing the energy value by a large percentage, but are providing appreciable amounts of the fat-soluble vitamin so essential to growth, especially in the diet of the young. And, in addition, honey contains in minute quantities practically all

the soluble minerals found in the human body.

ON account of lack of space in the last issue I merely alluded to the fact that Prof. Hawk's feeding experiments indicated that there are no anti-scorbutic vitamins, called water-soluble C, in honey. His experiments to determine this were conducted with guinea pigs as the victims; for they were victims, developing symptoms of scurvy as soon on the diet containing honey as they did on a diet known to be deficient in water-soluble C, altho otherwise balanced.

An interesting corroboration of this report occurs in an account of three men who were separated from Stefansson's party during his polar exploration. These men depended largely upon some cached foods which they had found—flour, salt pork, butter, honey, sugar, pilot bread, preserved fruit, pemmican, meat extract, dried fruit, rice, beans, and peas. They all three developed scurvy, but were promptly cured when fed large amounts of meat, mostly raw.

Note that the honey was in this case in very good company, for the other foods mentioned were valuable even if they did lack the anti-scorbutic vitamin. The best authorities agree that even milk is of only moderate value as an anti-scorbutic, and loses most of the value when pasteurized or boiled. That is the reason that orange juice is added to the infant's diet when it is fed pasteurized, sterilized, or condensed milk. It has also been proved that milk is by no means rich in water-soluble B altho it contains it in small amounts.

In spite of Stefansson's experience, feeding experiments with animals have never indicated that meat is very rich in water-soluble C. But the men of the Stefansson expedition ate it in extremely large quantities, including the fat and certain internal organs not generally eaten, and a large part of it was consumed raw. Water-soluble C is found in living vegetable and animal tissues, in largest amounts in fresh fruits and green vegetables.

THERE, you think I am wandering miles from my subject, don't you?

But there is method in my side trips, altho it may not be apparent. Now that we know there are vitamins in honey we ought to be well enough informed to be able to talk intelligently about the three kinds, always remembering that history is in the making as regards vitamins, and that something new is constantly being discovered. As my big boy quotes Latin to tell me "Repetition is the mother of education," so please forgive me if I go on to talk a little more about the vitamins, water-soluble B and fat-soluble A.

Water-soluble B occurs more widely in plant than in animal foods. It is found in practically all fresh vegetables, in cereals from which the germ has not been re-

moved by so-called refining processes, in rice polishings, in the heart, kidney, brain, and liver of animals, and in yeast, the last named being the richest known source of this vitamin. Water-soluble B is essential for normal growth and reproduction, and its absence produces the diseases polyneuritis and beriberi. While there is little danger of well-defined cases of these two diseases in the mixed diet of civilization, the best authorities agree that there is a danger of a deficiency of this vitamin in the modern diet with its overrefined foods and its enormous amount of canned goods; for the long heating necessary to sterilize canned foods is known to weaken and destroy the vitamin content. This deficiency is believed to be responsible for much ill health along the lines of polyneuritis and beriberi, but less well defined.

FAT-SOLUBLE A is found in abundance in the fat of milk, the yolk of egg, and in the green, leafy vegetables, such as spinach. It is also fairly abundant in fish oils, such as cod liver oil and even whale oil. I wonder of what value it will be to the world in the latter-named oil, if it smells like the vile stuff I have used to spray my rose bushes.

Oleo oil contains a fair amount of fat-soluble A and therefore the oleomargarines contain it also, but not the nut margarines made wholly from vegetable oils. However, we are warned by the nutrition experts that oleomargarines are not to be considered in the same class as good butter in providing the organism with the fat-soluble vitamin.

The fat-soluble vitamin is necessary to growth and development, especially in the young, and it is necessary to the maintenance of health in the adult. Its absence causes an eye disease, xerophthalmia, sometimes so severe as to cause blindness. Of late it appears that rickets in infants may be connected with the absence of the fat-soluble vitamin.

In the past few years much has been added to the knowledge of vitamins, not only from laboratory experiments but by observation of human experience in inadequate war diets in Europe. Also a form of partial blindness has been observed to be prevalent in certain lumber camps where the only fat available was that from cured bacon, which would be entirely lacking in the fat-soluble vitamin.

TO be consistent, here is a point which needs emphasis, even if I have a whole family of perfectly good relatives interested in the honey-bottling business, to say nothing of hundreds of beekeeping friends producing extracted honey. You know we have always plumed ourselves that honey is nature's own and only concentrated sweet, uninjured by any so-called refining processes. But now Prof. Hawk's report of the fat-soluble vitamins in comb

(Continued on page 631.)

ONCE several years ago I read of some beekeeper editor who confessed a fondness for articles on beelore that were written on scraps of paper smeared with propolis, because, forsooth, they were so evidently the product of a genuine beekeeper. I could see that favored type of writer in my mind's eye—a nice old man, a bit sticky as to fingers, sitting on a hive, with a pad of paper and a stubby pencil. Being a typewriter devotee myself, and not a nice old man, the closest I usually approach to my own treasured picture of a correct bee writer is to sit out among the bees with my little machine before me. So here I sit today. But it is almost impossible to write. There is something about the way the bees are humming that takes all my proper sideline thoughts away and weaves them into dreams. And shall there be dreams in a department on "Beekeeping as a Sideline"? To be sure, beekeeping would not be my sideline, nor one I would care often to write about, if it shut the door on dreams. But tho there have been many things in this particular department in months gone by, this really is, you see, a journal about bee culture, and the Editor questions the propriety of admitting other things. Probably he's right, especially when it comes to mere dreams of beauty and wide spaces and flaming life and days to come and God. But I'm afraid I'll have to begin writing indoors where thoughts are more easily controlled, foregoing the propolis stains on my paper and the humming of bees in my ears, to get away from the distracting bigness and beauty of this lovely world. But all true sideline beekeepers will agree that this gentle 'singing silence, laying its blessings on our souls, is one of the things that keeps us with our bees. It is not so much the money, nor to any great extent the honey, that brings us away from our other work to where the bees strike their shining trail across the sun. A great sense of something big and fine and high and soul-nurturing clings about a country bee-yard, like some unmeasured garment of the Unknown, the hem of which we sometimes touch with yearning or with rapture or with dream.

* * *

It really isn't strange that these bees of ours make us thus forget our chosen lines of thought in the days of early September. This noon the earth was dark and clouded, and when the sun came thru and flooded the hives, how the young bees did pour out into the light! Before hive after hive they swung and swayed and circled, filling the air with the sound of young wings. Just so fleetingly and hungrily they claimed their playtimes all during August, such a



rainy month it was. Only eight clear days they had between July and September, says our practical, sign-reading, record-keeping weatherman; and only

two so far this month, today being September eighth.

During the first part of that rainy spell of late summer, I sighed often thinking how the bees were being kept from the fields; and how they must be consuming all the nice clover honey we had left them (one shallow super per hive). Yet little by little the hives grew heavier. They had started gathering honeydew in July, and neither the usual sun nor the unusual rain of August stopped them. In it came, mixed of course with heartsease and a little sweet clover and other nectars, and finally they so surely had all they needed that we took from a score or more hives the supers of white clover honey we had left. But alas, a considerable part of the light honey had been eaten out and replaced with the honeydew and late honeys.

Local beekeepers have seldom had so much honeydew. Everyone is frankly troubled over the right thing to do with it. Nobody really wants to eat it or sell it or leave it for the bees to winter on. If there were only a little, it could be saved for spring feeding, but there's too much of it. A few beekeepers have boldly put it on the market, heavy with honeydew; and customers, expecting the same fine honey they had bought earlier, have registered many complaints. One beekeeper showed it to a baking concern, and they offered him about half what he had received in thousand-pound lots for his white honey.

* * *

I'm afraid there weren't any bees on those combs with the queen-cells, Mr. Pritchard, that we gave to the colonies whose queens we had just killed. Thus the cells were doubly "unprotected." Probably that explains our failure. But I doubt if this can account for Mr. Hasinger's experience of 50 per cent of such cells destroyed; for he speaks distinctly of giving combs with adhering bees, when outlining his own system.

You are right, too, about the misunderstanding of the term "unprotected cell". I have always thought of an unprotected cell as just plain unprotected. Since "the bees which would naturally adhere to such a comb are nearly if not quite as much protection to a queen-cell as would be a spiral cell-protector," perhaps we ought not to call a cell thus protected an "unprotected" cell.

* * *

The year will finally come, earlier perhaps than some dare hope, when box hives

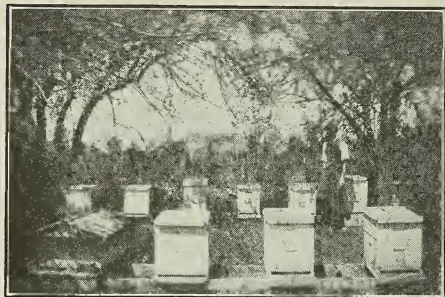
will be but relics of a past era. Season after season sees old apiaries undergoing the change from "gums" and antiquated ideas to movable-frame hives and modern beekeeping. Of course, it is only in the ranks of sideline beekeepers that these box hives are to be found, as commercial beekeeping would be impossible with them. So those of us who are eager to see the stigma of non-progressiveness removed from the name of sideline beekeeping are particularly interested in the modernizing of these old ill-kept yards. A really wonderful work has been done within the last few years in all sections of the country, quite notably in North Carolina. I suppose those of us who have never had the experience can scarcely appreciate the constant deepening of delight and satisfaction that a real bee-lover, who had never known anything but boxes and logs, gets from his new hives and his widening knowledge and increased skill.

John M. Weavil of Kernersville, N. C., is one who has made this important change, and here is what he says about it: "My grandfather was an old-fashioned beekeeper and gave me a colony when I was about 15 years old; so I have been a beekeeper for about 18 years. I continued as my grandfather did, till 1916, but it is needless to say I got nothing out of it. But I did not know any better then. What I most wish is that I had known what little I do now when I started."

In 1916, as soon as he found out about these better methods, he made his new start, transferring five colonies to new hives and introducing Italian queens, and they came thru the winter so well that "1917 gave me the bee fever right." The last I heard he had 30 colonies of Italian bees in modern hives, A B C and X Y Z of

to keep them for both, but this everlasting swarming has about taken all the pleasure out of it and I fear most of the profit." Which shows that he has progressed a long step in his undertaking of honey-production.

Then down in Mountville, Ga., is a young lad not yet out of his "teens," John C.



Apiary of John C. Hogg.

Hogg. About four years ago he began "studying, thinking, and observing bees" and this is how it happened. His father had quite an apiary, all in box hives. They kept hearing more or less about "patent hives" and finally in a farm journal they saw an advertisement of bee supplies that resulted in an order by his father for five hives with shallow supers, and a book on beekeeping. "Well, we got them," John continues in his letter. "The book was looked thru by the whole family and then laid aside. Nobody seemed the least bit interested. Then I began to read it and soon became interested, interest grew into fever, and now I have the worst ever known. I had no idea there was so much to learn about the little fellows."

That first summer his sisters came home from a fish-fry one day, telling about a kind-hearted old miller who had some bees in these new hives. It wasn't long before John managed to join a fishing party going down that way, but instead of fishing he stayed at the house and mill, talking bees with J. T. Perry, the old and crippled miller who kept bees in modern hives. It was "Uncle Perry," indeed, who told him about Gleanings, giving him an old copy. He promptly subscribed and hasn't missed an issue since, "and with it I have got the Townsend Bee Book and A B C and X Y Z of Bee Culture. I have read every article available on bees since the first issue of Gleanings arrived. I have recently purchased a kodak and am sending you one of the first views I ever snapped with it."

It is only fair to add that he closes a later letter thus: "I believe that is about all I have to say except that I was about to offer my kodak for sale because you tell me there is more to learn about photography than about bees!"



John C. Weavil in his apiary.

Bee Culture, Dr. Miller's "Fifty Years among the Bees," and Gleanings. He is a farmer with a mechanical bent, and has been able to make some of his hives from licorice cases obtained from a tobacco factory. Like many of us he had a hard time with the swarming mania of last year. "As for keeping bees for pleasure or profit," he wrote at that time, "I have been trying



FROM NORTH, EAST, WEST AND SOUTH



In Northern California.—Present indications point to but half a crop in our section of the State. There are a few districts, however, that already have secured or expect to secure a full crop; but the great majority of beekeepers report that they will get but half the honey produced last year. The entire season has been decidedly freakish. In most places bees hardly held their own. On the deciduous fruits and mustard and other spring bloom they fared better, but the flow was short from these sources owing to lack of moisture. The orange flow was normal, but that from the sage was almost a total failure. Where the frost did not injure the eucalyptus buds a good crop of honey was harvested during May and part of June. Ordinarily June is not a very good honey month; but this season, in our central part especially, it has proved one of our best. Conditions at that time indicated a good season, but July and August were off months with very changeable weather. Several times alfalfa started to flow freely, only to be interrupted apparently by atmospheric changes. Honeydew along the rivers started quite a bit earlier than last year, but a week of very warm weather in August seems to have killed off a considerable quantity of the aphids. A thunderstorm with rain in varying amounts in different parts of the valley followed, and it is believed that the rain where heavy enough washed a considerable number of the aphids off the willows. The large green louse, reputed to be the best of honeydew-producers, has not been seen this year by Herbert Lynch, a close observer, and since the ladybugs have been in large numbers it is believed that these predaceous insects are responsible. The fall bloom after the August showers looked fine, but up to the present time (Sept. 9) has been yielding nectar very sparingly. A well-known and large honey-producer in Merced county reports the total loss of 200 colonies thru poisoned nectar from jackass clover. In Stanislaus County bees have been working this clover for several weeks, with no losses reported locally.

We can report two eucalyptus groves less than 20 miles apart, the one yielding several tons of honey and the other less than one-half ton. Here the difference in yield can be detected, as the grove that yields so little has been subjected to a temperature several degrees lower than the other, causing the death of most of the buds. There are also two honeydew localities less than 10 miles apart that show a difference in yield per colony of from one to five pounds daily. The causes contributing to this difference may be too hot a temperature (possibly only a matter of two or three degrees, as the aphids may succumb at a certain

temperature ranging between 100 and 110 degrees), rain in sufficient quantities to wash the aphids off the leaves, insect and bird pests, and unquestionably other causes, principal among which are atmospheric changes. We have also had this year alfalfa localities less than 15 miles apart where one locality has produced over 150 pounds per colony and the other not more than 50 pounds. In these localities the temperature and moisture conditions and the amount of wind were apparently the same, and the casual observer would be at a loss to account for the divergence in yields in the two localities, where, it must be added, the amount of bloom and the condition of the bees were nearly the same for both sections. It is gratifying to know that Dr. E. F. Phillips of Washington is deeply interested in locality problems and is at present carrying on investigation work along such lines. Any and all observations that beekeepers may make along these directions are very valuable, and the writer believes that there is no question but that our bee journals will be glad to print such observations. No doubt the character of the soil, its moisture content, and the question of soil drainage, as well as the all-important atmospheric condition, are important contributing factors toward the variance in nectar secretion.

Modesto, Calif.

M. C. Richter.

* * *

In Southern California.—The writer has been spending the month camping in the mountains of Tuolumne County. About 15 were in the party, and a gala time has been enjoyed. The flora is very scarce at this season of the year. The honeybee was looked for but was found wanting. An insect that looks a little like a honeybee was found working on a small patch of blue curls that was growing on the rocky hillside. Beautiful pines, firs, and oaks, together with buckeye and poison oak, cover the mountains. Practically none of the land is level enough for cultivation.

Alfalfa as a honey plant yields much better in some localities than in others. Usually the first crop, which has been growing in various degrees since the fall before, is cut just as the first blossoms appear. The second cutting, which is the one that furnishes practically all of the surplus honey, is the one that blooms most vigorously. It seems to put forth all its efforts toward a full bloom, and, if let alone, will furnish the best seed crop. Localities where the alfalfa is left for seed are the ideal places for the beekeeper. When followed by sweet clover, as it is in many western sections, a combination is found that is giving us much of our western honey crop.

Corona, Calif.

L. L. Andrews.



FROM NORTH, EAST, WEST AND SOUTH



In Texas.— At the Farmers' Short Course, held August 2 to 7, Prof. S. W. Bilsing, professor of entomology, gave a course in beekeeping. As the meeting is largely attended by the county agents and their organizations, many beginners in beekeeping were among the number. It is very probable that next year a week's work will be given.

The annual session of the educational branch of the Texas Honey Producers' Association, the 28th annual meeting of the beekeepers of Texas, was also held recently. Up to four years ago these meetings were carried on by the Texas Beekeepers' Association, and this year this old name was again assumed. So we now have the Texas Honey Producers' Association, a co-operative buying and selling body, and the Texas Beekeepers' Association, an educational body including all beekeepers who wish to belong. The program this year contained many numbers of great interest. The reports of W. C. Collier and E. G. LeSturgeon, delegates to the meeting of the Texas Honey Producers' League, were well received. The paper of Dr. M. C. Tanquary, state entomologist, giving the progress of the foul-brood work in which he outlined the new policy of the Division relative to inspection and treatment, was heartily endorsed by all present. E. B. Ault of Calallen sent a paper on shipping bees in combless packages, which attracted a great deal of attention, as nearly every beekeeper in Texas can see possibilities for the increase in their business by the selling of live bees. The reports of the secretary and treasurer showed that the beekeepers' section of the Farmers' Congress had the largest enrollment of any section and paid the greater share of the expenses of the congress. Every beekeeper in attendance went away carrying with him the desire to return to a far larger and better meeting in 1921. Because of the lack of interest in the Farmers' Congress, it is doubtful if this meeting will be held next year, but arrangements are already on foot to hold a meeting of the Texas Beekeepers' Association during the short course of 1921, at which time a beekeepers' school will be conducted as a part of the regular short course.

The condition of the honey plants thruout the State indicates a normal fall honey flow. The rains, which occurred during the second week of August, make conditions very favorable for a honey flow next spring, especially another crop of horse-mint, as the rains came just after the horsemint seeds had ripened. A statement was made during the beekeepers' meeting at the Farmers' Congress that the honey-producers of Texas had already harvested the largest and highest-priced honey crop

ever produced in Texas. This statement passed unchallenged in an audience of 150 beekeepers. It is safe to say that one-fourth of the year's honey crop has not yet been taken from the hives. There is a strong flow from cotton thruout the black land section. T. W. Burleson of Waxahachie was asked to average the daily flow from cotton in his section and found that during the first week in August his colonies were storing two and one-half pounds per colony per day. There will be an immense blooming of boneset and bitterweed this fall, but the broomweed is not showing up in as great numbers as it did last year.

During the beekeepers' meeting, a statement was made by a prominent beekeeper that it was a matter of interest to him that the boll weevil was less severe on cotton in the vicinity of his apiaries than elsewhere. This statement was substantiated by the remarks of a large number of beekeepers present. While these men had no definite data with checks, they are convinced that the bees control the boll weevil. This presents a new field of investigation in the very interesting subject of the relationship which exists between the honey-bee and the cotton plant.

An attempt has been made to get the average production per hive for the various sections of the State. Up to the present, the cotton section reports an average of 50 pounds. This includes yields from horse-mint and cotton. The southern part of the chapparal district, where the yields are from huajillo and horsemint principally, the average was 92 pounds. In the upper edge of the same section where horsemint, mesquite, and white brush furnish the most of the honey, the average was 80 pounds.

W. O. Victor of Uvalde, in commenting on shipping bees in carload lots, made a statement that in 15 carloads of bees shipped out, there was a loss of only five per cent. He further stated that he had shipped in box, cattle, and refrigerator cars and that if the icing stations of the roads were near enough together, the refrigerator car would be an ideal way of shipping bees; but, as ice was hard to obtain in the section of the country thru which the bees passed, he preferred to ship them in stock cars. In summing up his talk on migratory beekeeping, he said that, while he had made money in shipping bees long distances, he believed that there is more money in moving bees to locations which are nearer together, using the limit of distance between the apiaries as that distance which can be traveled by an automobile truck with economy. He finished by stating that he believed about 200 miles is as far as one should move bees, taking everything into consideration.

College Station, Texas. H. B. Parks.

HEADS OF GRAIN FROM DIFFERENT FIELDS

The "Phillips Plan" of Packing Approved.

I'm glad they were. Last winter nearly all my colonies were packed in quadruple packing cases, and I wintered in single, and some in double 8-frame stories without packing, so that I could compare them with those packed in the big cases, to see if packing would pay in this part of the country.

Last December was a month that broke the record here of the last 32 years. The thermometer went down as low as 22 below and as high as 74 above zero, with intermittent cold and warm weather, which is necessarily hard on bees. It was warm enough in the middle of January for the bees to be flying almost every day.

Those in the big cases with their entrance of just one of the five $\frac{3}{8}$ -inch holes open, kept their entrance-holes open just as well as those bees not packed, with an entrance $\frac{3}{8}$ inch by 4 inches. There were but very few dead bees in front of the packing cases, while those not packed lost lots of bees, probably 50 per cent.

I had some colonies packed on a modified "Demuth Plan," four 8-frame hives standing on end in a large case. I had six of these cases, but did not like this way of packing them as well as the "Dr. Phillips Plan," with double story. The former I have to unpack quite early to provide room and stores; while the latter can stay packed till harvest begins, as they have all the room

and stores needed—all good colonies, and young queens.

The quadruple cases have not come into any use here yet. In fact, I'm the only one around here that I know of, who is using them.

G. A. Pauli.

Fowler, Colo.

Tropical Supersedure of Old Queens.

reference to supersedure.

In Pennsylvania I found bees almost invariably started queen-cells in the spring or fall. In midsummer supersedure seldom took place. I rather think the cold winters have the effect of inducing the bees to feel the need of larger numbers for a working force. So when the bees find their queen is beginning to fail, she is promptly superseded.

In a country where a three-frame nucleus will winter as well as a full colony there is not this necessity, and I believe this is one reason why the bees do not bother with superseding the failing queens. After spending seven years in Porto Rico I can join with Mr. Butsch, at least in part. Colonies here, if allowed to, will to a great extent seldom requen. They will dwindle down until the colony is ultimately robbed out, because there are too few bees to defend their entrance. The mortality of

I have noted in Gleanings the different views of Dr. Miller and A. Butsch, in reference to supersedure.



A winter scene in Mr. Pauli's apiary, showing some of his big packing cases.

HEADS OF GRAIN FROM DIFFERENT FIELDS

mating virgins here is frequently 50 per cent. This undoubtedly adds its evil to the non-supersedure tendency. This means that a large proportion of the supersedure cells which may be started, never develop into laying queens.

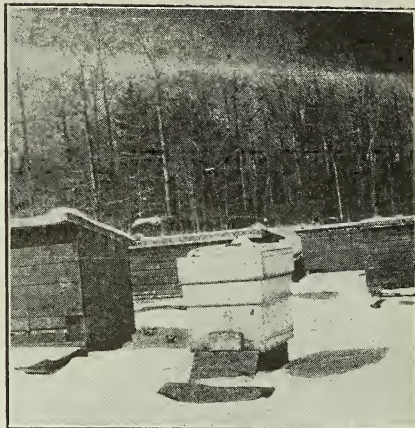
Regular swarming queen-cells are produced much more rarely here than in the north. Five per cent swarming is the greatest I have had so far. This likely may also be a contributing cause to non-supersedure.

Last year the breeding queen which I was using began to fail. The strength of her colony dwindled down to about three and a half frames of bees, before they started cells (supersedure). I then added brood to keep up their strength to five or six frames, naturally destroying the queen-cells. Three times after this, they again tried to supersede. After that they made no further attempt. And the colony continued mostly on the brood that I added, until the queen died of old age.

Aibonito, Porto Rico. Penn G. Snyder.



Excellent Wintering in Sheds. Here is a picture of my little bee-yard of 14 hives, showing the way I pack them in these sheds. They have wintered 100 per cent for the last five winters, and they come out strong in bees even tho the winter temperature may go as low as 21 degrees below zero. These sheds are big enough so there is room for from two to six inches of shavings on the sides and about ten inches on top. The



The Wilcox winter bee-sheds.

inner cover is glued down tight. The hives face the southeast, and there are woods on the north and the west sides. Last year I cleared \$260 from the sale of honey.

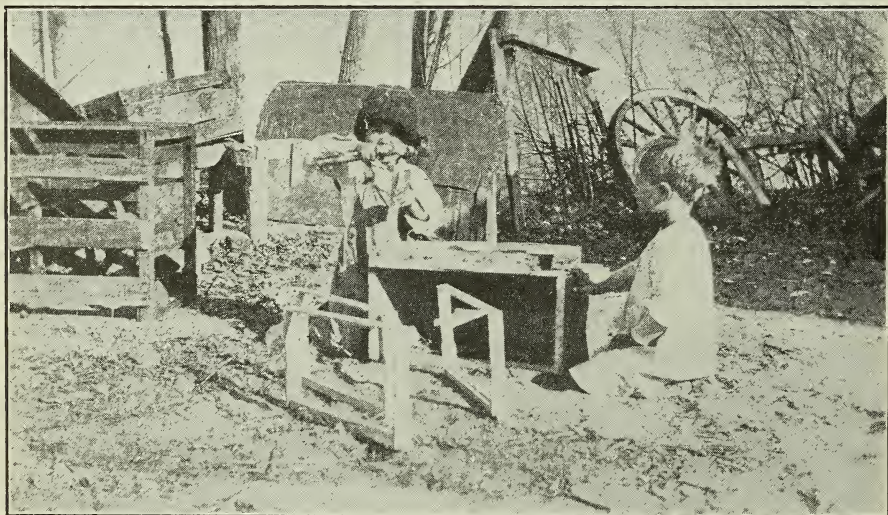
Rt. 1, Kane, Pa.

E. J. Wilcox.



Here Is a Very Young Beekeeper.

The accompanying picture shows the youngest beekeeper in our county, Geo. O. Ray, Jr., three years old, with hammer and his first three frames made entirely by himself on his own small workbench. Sitting near is his little broth-



The three-year-old making up frames.

HEADS OF GRAIN FROM DIFFERENT FIELDS

er who also wants to make frames. "Don't, daddy, Jo will get my hammer," was the protest voiced just as this snapshot was taken, after carrying the bench, frames, and boy out of the shop nearby. Geo. O. Ray. Fallon, Nev.

Another Way to Remove Pollen.

It may be possible that Dr. Miller's, J. R. Crane's, or Mr. Alexander's method of removing pollen from combs will work, but I have my doubts. During the season of 1899 I moved from the alfalfa to the Arizona clover district on the west side of the San Joaquin Valley. There came a flow of nectar and pollen also. In less than two weeks my brood-combs were almost filled with pollen. I removed them to the supers and then to the extractor, where all the honey was removed. I then placed them in water for about 15 or 16 hours, when they were removed and given a good shaking and allowed to dry. The water caused the pollen to swell and the drying caused it to shrink, after which I gave them another shaking, when most of the pollen fell out. They were then placed in the brood-nest, where the bees removed the remainder, and the queen filled the combs with eggs. During a part of the season I was short of combs and did not dry them but placed them in the brood-nest wet and got just as good results. I would not advise using them wet except during hot weather and during a good flow of nectar.

San Jose, Cal.

J. T. Dunn.

The Menace of Box Hives.

It was my good fortune in 1907 to influence our authorities so far as to obtain legislation to abolish box hives. Gleanings at that time did not agree with such drastic measures, but believed the evil would cure itself; in fact, it held out the hope that foul brood would eliminate careless beekeepers by destroying their bees—a theory that was altogether foreign to our experience in New Zealand, and one which I could not entertain for a moment.

In my own native country (England) it has been the custom in the past to recommend beekeeping to the poorest of cottagers—people who could not afford to purchase proper frame hives and literature to guide them. Straw skeps and common boxes, with the accompanying sulphur-pit, were much in vogue. Of course, one can sympathize with those who wish to keep bees to bring in a few dollars, but can not afford to conduct the business in proper lines. But if such beekeeping is a menace to the business generally, then we have no right to encourage or tolerate it. Beekeeping in New Zealand was going to the dogs thru the same ignorant and careless beekeeping; but, thanks to drastic legislation, it is now established on a sound commercial basis. I can see no prospect of improvement in control of bee disease in any country until box-hive beekeeping is banished. It will come in time, I am sure.

Isaac Hopkins.

Auckland, N. Z.



J. O. Wallace, bee inspector for Lewis and Pacific counties, Wash., giving a demonstration of treatment for American foul brood at a beekeepers' meeting held June 26 last at the home of W. L. Cox at Elma, Wash. Both American and European foul brood are very bad in the coast counties of Washington.

HEADS OF GRAIN FROM DIFFERENT FIELDS

What Disease Symptoms Are They?

E. J. Ladd's article in the August number, answering J. L. Byer's of July Gleanings regarding his bees dying off, is far from being true, else several beekeepers along the Verde and Oak Creek Valley would be much enlightened by it. The malady described by Mr. Byer is not a disappearing disease, for his bees do not disappear. He speaks of the bees being much agitated and with widely outstretched wings running to and fro violently trembling, until too weak or tired, they drop off on the ground, where a heap of dying bees and dead ones are accumulating until all but a few die. Only about six per cent of all colonies seem to have escaped. Those left are weak and it seems almost impossible to build them up. Moisture you say! Why we have had no rain since the last of February until the

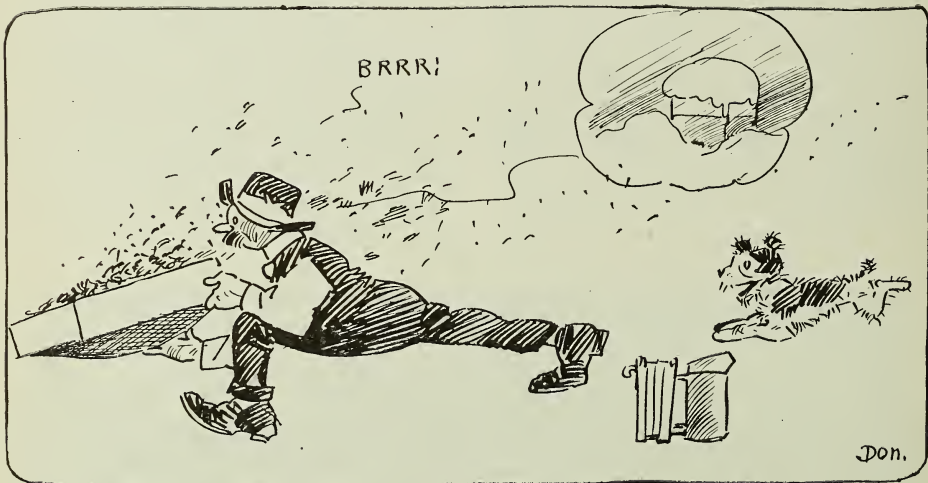
last part of August; dryest in 30 years. Ours is exactly the same as Byer describes. Few, yes, very few bees die any distance from the hive. My home yard, which is about 4½ miles away from the United Verde Extension Copper Company Smelter and which gets the benefit(?) of its fumigation every few days, was not affected. Moreover, I have brought and given empty and partly filled combs from the affected colonies to my home colonies without any ill effect, and weak colonies are being built up fairly well at home when transferred from the affected apiary. Our troubles happened the fore part of June. Mr. Mathews, our state inspector, pronounced it a strange malady, with which he had not the slightest acquaintance, a new bee disease, brother Ladd; yes about like recent diseases of our trees, shrubs, plants; yes, and animals.

Cornville, Ariz.

L. Tissaw.

Winter's Coming.—By Bill Mellvir

(With Apologies to Walt Mason.)



The winter's approaching, the frost is encroaching, soon turning green verdure to gold; the evenings are chilly and straw hats look silly and are you prepared for the cold? These days are so snappy that you are quite happy, forgetting such weather can't last. You're basking at present thru days that are pleasant; but are you prepared for the blast? Old Winter is mixing his war paint and fixing to give us a jolt in the neck; the winds will be blowing, the rain will be snowing, and sleet will come down by the peck. From cold polar regions o'er icebergs by legions, the winds will come cutting like knives. They'll raise the Old Harry, the snow they will carry and

plaster it over the hives. And are you preparing for winter rip-tearing, O knights of the smoker and veil? or are you just waiting till time to go skating before you prepare for the gale? Are all the hives heavy so winter can't levy a toll in starvation again? or are you too busy joy-riding with Lizzie to think of things other than tin? Say, are you providing some packing and sliding the hives in a good winter case? or are you still burning the coin you've been earning—still sinking it minus a trace? And have you provided a windbreak one-sided for checking Old Boreas' speed? And are you now blocking down entrances shocking? For winter is drastic indeed.

THE annual meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in the court house at Freeport, Ill., on Thursday, Oct. 19. B. Kennedy, 416 E. State St., Rockford, Ill., is secretary, and will supply information.

* * *

The following message of sympathy was sent to Mrs. C. C. Miller at Marengo, Ill., by the beekeepers attending the Ohio field meet at Medina on Sept. 10:

"We, the beekeepers of Ohio assembled at Medina, this 10th day of September, 1920, are greatly grieved at the announcement of the death of Dr. C. C. Miller, the most beloved keeper of bees in all the world, a man of action, a man of wisdom, a man who loved all nature—the flowers, the bees; and, above all, a man full to the utmost of love for his fellow men. The loss of such a one will be keenly felt thruout the beekeeping world. Therefore, we, the beekeepers of Ohio, extend to the family of Dr. Miller our deepest sympathy." (Signed F. B. Moore, Iona Fowls, J. S. Hine, Committee on Resolutions.)

* * *

Udo Toepperwein, 42 years of age, one of the best-known beekeepers of Texas, died on Aug. 7 as the result of blood poisoning occasioned by a slight scratch from a mesquite thorn. A few years ago his name was foremost among Texas beekeepers. In his time he greatly developed the Texas honey market, dealt in beekeepers' supplies, and served in every office within the gift of the Texas State Beekeepers' Association.

* * *

The second manual of the North Carolina Beekeepers' Association was issued in September. Its 22 pages are loaded with beekeeping matter of especial interest and use to North Carolina beekeepers. All in all, it is a very great credit to the Association, and an emphatic testimonial of the new and better day in beekeeping that has dawned in the Tar Heel State. The officers of this up-and-doing association are: Jas. M. Gibbs, Reidsville, N. C., president; W. W. King, Jr., Wilmington, N. C., vice president; J. E. Echert, Winston-Salem, N. C., secretary; these together with R. W. Etheridge of Selma, N. C., and D. W. Monroe of Chadbourne, N. C., make up the executive committee. The secretary especially gives unstintingly of his time and interest to the organization's welfare.

* * *

Despite very unfavorable weather, 375 Ohio beekeepers gathered at Medina on Sept. 10 for the annual field meet of the Ohio State Beekeepers' Association. Dr.



Ernest Kohn presided in his usual happy way. The chief beekeeping talks of the day were given by Geo. S. Demuth and E. L. Sechrist, and bee demonstra-

tions were given by Miss Fowls and Mell Pritchard. The eminent cartoonist, J. H. Donahey, delighted the crowd with a chalk talk on beekeeping. The A. I. Root Company acted as host, and, besides providing a cafeteria luncheon and a tent auditorium, the big manufacturing plant and queen-rearing yards were thrown open to the inspection of the visitors. A feature of the day was the deep mark of respect paid to the memory of Dr. C. C. Miller. Not only were resolutions of sorrow and sympathy adopted and directed to the family of the deceased, but several of the beekeeping songs written by Dr. Miller were sung, and A. I. Root delivered a tender and beautiful tribute to the dead, speaking on "My First Acquaintance with Dr. C. C. Miller".

* * *

The 40th annual convention of the Ontario Beekeepers' Association will be held at the Ontario Agricultural College at Guelph on Dec. 1, 2, and 3, 1920. This is expected to be a great beekeepers' meeting, and notice is being given well in advance. The program will be given later. F. Eric Millen, Provincial Apiarist, is in charge.

* * *

Wisconsin produced during 1919 4,834,000 pounds of surplus honey, of which 18 per cent, or 836,000 lbs., was comb and 4,008,000 extracted. These figures issued by the Wisconsin crop reporting service are the first estimate ever made of Wisconsin honey production. This amount is an average of 54 pounds a colony, comb honey yielding 34 pounds per colony and extracted 61 pounds. There were 90,000 colonies in the State in 1919. The total value of the 1919 honey crop of Wisconsin is estimated at \$1,207,730. On Jan. 1 the average price of comb honey was 32.6c; of extracted, 24.8c. The average value per hive is estimated at \$8.50, a total value of \$765,000.

* * *

A letter from R. F. Holtermann of Brantford, Ont., states that the Hon. E. C. Drury, the new premier of Ontario, is a practical beekeeper; has kept bees in a modern way for years; has gone thru a siege of European foul brood, and is a subscriber and regular reader of *Gleanings in Bee Culture*. Mr. Holtermann adds, that "before becoming premier, Mr. Drury had studied out some methods of combating foul brood, of which the country is likely to hear in the not far distant future."

QUESTIONS.—

(1) Is it advisable to put a super with sections on the hive in the fall and let the bees have it over winter and until the honey flow so that no spring feeding will be necessary? (2) Can the queen and drone trap be used to prevent after-swarms?

Minnesota.

Harold Hanson.

Answers.—It would not be advisable to leave sections on the hive over winter. It would be a very cold arrangement. The section boxes are so small that the bees do not enter them readily, and the combs in the sections are so new there would be little warmth in them. Combs that have been used for rearing brood are much warmer and better adapted for wintering. If the colony has enough food to last them over winter, the sections might be saved, however, and given the bees, placing above a queen-excluder in the spring before the bees would have a chance to gather nectar from the fields. (2) Altho the queen and drone trap could be used to prevent after-swarms, we do not recommend its use. It is much cheaper and more satisfactory after the first swarm issues to move the hive to a new location and tear down all but the one best queen-cell. When colonies are treated in this way they almost never cast after-swarms.

Questions.—(1) I intend to give my bees four or five standard frames of clover honey and would like to know the best way to give it to them. My extracting frames are placed nine to the super. I could take one extra comb out of the brood-chamber in the fall, and that would make room for the wider combs, but would the bees winter as well and build up in the spring as well when the combs were as far apart? (2) I had thought of uncapping them and putting them on over an escape-board at the time I have my combs cleaned out after the fall flow. Or, I could give them combs that were drawn from foundation and would be the right thickness for the brood-chamber, but have understood that bees winter better in old combs than on new.

Ontario.

E. C. Hardri.

Answers.—(1) Since your extracting combs are so much thicker than the brood-combs, we advise removing two or three frames from the brood-chamber, and then placing the combs so that there will be a bee-space between all of them. If this leaves a space at the side of the hive, place a thin division-board next to the combs and fill the space next to the wall of the hive with packing material of dry leaves or planer shavings. (2) Altho it would be possible for you to feed the honey by uncapping it as you suggest we do not advise this, for it would be more expensive, since the bees would consume quite a little of the honey in removing it from the combs and storing it in the brood-chamber. You could use the method in case you have combs partly filled with honey, but would not advise it for

GLEANED BY ASKING

Iona Fowls

entire combs of honey. It is true that bees do winter better on old combs in which brood has been reared, and yet, we never hesitate to give a colony a few

extracting combs of honey in case they need them in the fall. We place these combs in the brood-chamber just at the side of the brood-nest. This will give the bees a chance to cluster on the old warmer combs.

Questions.—(1) How many pounds of honey should be in the brood-chamber of an eight-frame hive when ready for winter? (2) Is beebread as good a food as honey for winter? (3) What time of the year does the queen stop laying? Does she stop before you are ready to pack them for winter? If so, how long before?

Minnesota.

Charley Krueger.

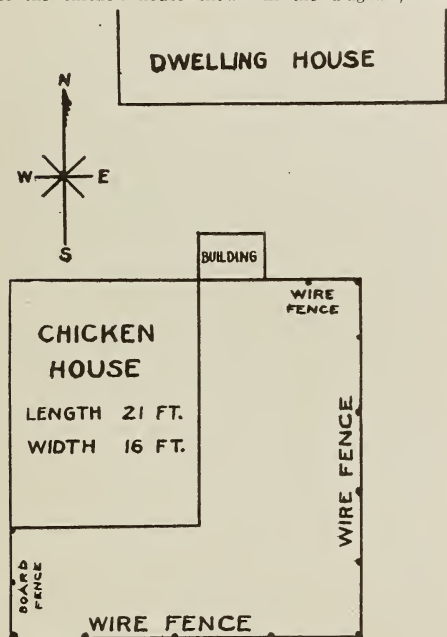
Answers.—(1) At least 30 pounds in your locality. (2) No, the stores should be honey or a good sugar syrup. Beebread will not suffice as a winter food. It will be needed, however, in the spring when the colonies are raising brood. (3) After the main honey flow the queen lays fewer eggs and in some cases, if old, stops entirely. In the fall, in your locality, we believe queens might be expected to stop laying at least by the middle of October. But the time would vary several weeks with the season and with the age of the queen.

ANSWERS BY DR. C. C. MILLER.

Questions.—(1) In regard to the size of the hive, I should be glad to make my Danzenbaker hives deeper by adding a rim to the bottom if you think well of it, making it a ten-frame Langstroth; or add more and make it a Jumbo L. hive. Of course, being a woman, I am trying to avoid heavy hives. Then, too, I read in an old issue of Gleanings, that J. L. Byer claims the ten-frame Langstroth is not so easy to manage as an eight-frame Langstroth or a Jumbo. I am more than anxious to avoid the swarming, as that is all my bees have ever done so far. The bees generally light too high, and we do not like to saw off the limbs of the trees as a rule. What would be your choice of the following?

(a) Ten-frame Langstroth hive, wintering in two hive-bodies; (b) Jumbo Langstroth hive, wintering in one hive-body; (c) An eight-frame hive, 11 1/2 inches deep. I should be glad to have a hive made by most (or several) firms so I could order supplies that fit, but I also want something that I can manage too. (2) In regard to swarming, on page 409, July (1918) Gleanings, you say you like the Fowls plan. Is it the one described in the ABC & XYZ of Bee Culture (1917 edition)? You also speak highly of Miss Fowls' description of the Demaree plan on page 338. But there is no page 338 in July (1918) number of Gleanings. Can you tell me where I can find the article referred to? I do not find it in the ABC & XYZ of Bee Culture. (3) Do you think the best plan for me to use this spring would be to put a large hive-body over my Danzenbaker hives and trust to the bees and queen to go up and draw out the comb and spread themselves out to their own satisfaction? If so, when would you put the larger hive-bodies over the brood-chamber? (4) Are the Danzenbaker hives exactly the same in

length and width as the ten-frame Langstroth hive or the Jumbo? I understood Dr. Phillips that they were, but the illustrations on page 359 of the ABC & XYZ of Bee Culture show the Langstroth to be 17½ inches long while it gives the Danzenbaker as 17 inches long. If this is true I don't see how I could make my Danzenbaker hives over into Langstroth hives if I should decide to do so. (5) What kind of a queen-excluder is best? (6) Do you think Hamelberg's swarm-catcher practical? That is, would it be worth while making one? (7) What book can I get that will best suit one who is still at the bottom of the ladder in beekeeping. I can raise bees but can't produce honey as yet. (8) I live about 40 miles west of Albany, N. Y., and the winters are liable to be very severe; worse even than the cold, perhaps, are the strong west and southwest winds we have been getting for the past few years. Year before last the south wind blew down silos and blew off a number of roofs. There are no trees or hedges to afford protection to the grounds around the house where I might winter the bees and we have no cellar suitable for them. Therefore, if I keep bees, it must be outdoors. I might make use of the chicken house shown in the diagram, if I

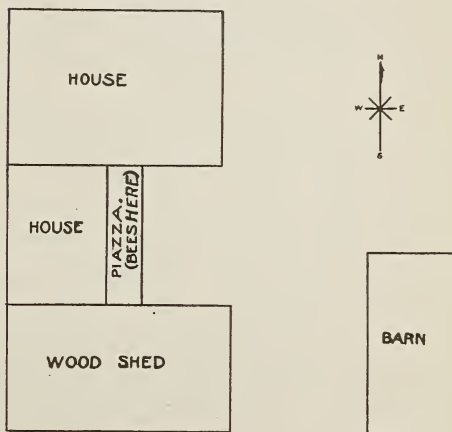


Proposed summer location for colonies on the south or east side of the inclosure.

knew how to pack them properly, or, I might erect a small building. Possibly the single packing cases would be best for me. The packing of four hives in a case is pronounced a failure around this part of the State. I should be glad to know what you would advise for wintering bees here. (9) The accompanying drawing shows where I expect to keep my bees next summer. I would like to place them facing east but they annoy people going out of the house. Would it do to have them face the direction marked "south", which is really a little on the southwest from which we get strong winds? New York. Adaline Eldredge.

Answers.—(1) It is not easy to choose among the three hives you name, possibly the Jumbo having the preference. You might

like the Dadant, only it is not on all lists. (2) Likely you will find nothing better than the Fowls plan to help you against swarming. It is on page 338, June number. (3) Instead of putting the large hive-body over the Langstroth, put it under, putting an excluder between the two when you find the queen below. Do this any time before the queen becomes crowded in the old hive. (4) The Danzenbaker, the Jumbo, and the 10-frame Langstroth are each 20 inches long and 16½ inches wide. The 17½ and



Winter location for bees. The colonies are packed in straw and placed on the piazza of an unused farm house.

17 that you mention are the lengths of the frames of the Langstroth and Danzenbaker. (5) The wire queen-excluder is considered best. (6) I am not familiar with Hamelberg's swarm-catcher, but if you follow the Fowls plan you will hardly need a swarm-catcher, especially if you have all queens clipped, and clipping will save climbing trees, no matter what plan you follow. (7) As to books, you seem to have Root's ABC and XYZ, and you can hardly better that, whether at the bottom or the top of the ladder. Dadant's Langstroth, and the books of Phillips and Pellett are all good, and you might like my "Fifty Years among the Bees" and "1000 Answers." (8) With regard to wintering, I think my first effort would be to make the cellar suitable for wintering, even if I had to dig a sub-cellar. The probability in that your cellar is too cold. Outside banking might succeed, or an extra inside wall. For outdoor wintering perhaps you cannot do better than to continue the piazza you are now using, always supposing that there is opportunity for the bees to fly when a warm day comes. Or, you could use the chicken-house the same way: only don't think of putting them in the chicken-house with no passage to the outer air. (9) Your bees can face southwest; but, if the meshes of your wire fence are pretty close and the fence higher than people's heads, the bees hardly ought to trouble passers-by. C. C. Miller.

VIOLATION of the pure food and drug act, by Swift & Co., brought the packing house a \$100 fine in the United States federal court

yesterday. The charge was that 'queen bee syrup' had been sold for pure honey, altho the substance contained glucose. It was brought out in the trial that a branch house had handled this and not the main office of the company, and in consideration of this the fine was 'light.'—Portland Oregonian, Sept. 1.

"While in Florida wife and I had a ride in Mr. Root's carriage drawn by the horse that gets fed air only—no hay nor oats."—S. C. Heisey, Lancaster County, Pa.

"The most of South California has had a fine crop of honey—parts of it, a second crop. My own crop was 16 tons, which involves some work."—J. D. Bixby, Sr., Los Angeles County, Calif.

"After a cool wet summer, bees are in their glory now. Two ten-frame supers full of heartsease-goldenrod honey, and no time to seal it. Bees should make 150 pounds per hive."—J. F. Garretson, Somerset County, N. J.

"With recent timely rains the prospects for clover for next season are improving daily and we indulge the hope that it will be in full compensation for this off year in western New York in particular."—O. L. Hershiser, Erie County, N. Y.

"Our Spokane Beekeepers' Short Course started last night with stereopticon talk by 'yours truly,' and by the time of the second meeting, which will be held on the evening of Sept. 30 at the Chamber of Commerce, we expect to have 100 members enrolled."—Geo. W. York, Spokane, Wash.

"I am enclosing one of our county beekeeping letters just to show you our efforts to help beekeepers in our county. These letters on general beekeeping information are sent to about 165 beekeepers in the county, and the sheets dealing with seasonal beekeeping practice are sent to about 60 members of the county association."—Ivan Whiting, Sheboygan County, Wis.

"This office is attempting to teach better methods of beekeeping along with the inspection work. We have beekeepers' tours in the counties where the inspection work is being done, and usually these tours come after the inspection work is over, and it is used as a means of getting the beekeepers acquainted in the community so that they will feel free to call upon each other for assistance in the treatment and eradication of bee diseases. We also have

BEES, MEN AND THINGS

(You may find it here)

meetings with the county association, and these are usually run in one and two day schools in each county. We have these meetings before the in-

spection work opens in the spring, and at these meetings we usually plan when and how these tours shall be run in those counties. We find that this has been one of the greatest aids we have had in our work, as we get the interested beekeepers to make inquiries among their neighbors and find just where the bees are located, and we usually have a complete list of the beekeepers in each county before the work is started in the spring. Last season we inspected approximately 2,000 apiaries containing 20,000 colonies of bees."—Frank N. Wallace, State Entomologist, Indiana.

"The Jackass clover flow is on and at its best now, and has been producing steadily since Aug. 20. Medium colonies are storing from six to eight pounds daily, and only a heavy rain or a frost will stop it. The honey is white of fine body. We have in Fresno County this year an estimate of not less than 30 sections of it in the north-western plain. Sorry to say that is understocked with bees at present with about 10,000 colonies, and is good for twice that number."—C. R. Snyder, Fresno County Inspector of Apiaries, California.

"At different times during last winter I mentioned the cellar built by us last summer, in which we were wintering 60 colonies. The cellar was partitioned off, and the bees were in a room 10 by 12. The temperature was 43 degrees **always**, no matter if the outside temperature was 25 below or 50 above. The ceiling is always damp for some reason—no doubt because of too low a temperature. Ventilation was good whenever a wind was blowing, but rather sluggish when the weather was 'muggy.' Bees always had a 'hum' among them, and I had an idea that the death loss was too heavy—about a bushel and a half of dead bees from the 60 colonies. But this included **all** the bees from three strong colonies, that unfortunately had combs of natural stores which granulated as hard as a board, the bees taking dysentery and smearing everything, and eventually leaving the hives and dropping on the floor. Right in the same tiers were colonies fed with sugar syrup, and they wintered in ideal condition—not a spot on the hives and the bees clustering quietly all winter. So, after all, I am at a loss to pass judgment on the cellar, for where stores were good it gave good results, and where the colonies died, it is doubtful if they could have wintered either outside or in the best of cellars."—J. L. Byer, Markham, Ont.

NOW that the beginner has his colonies all supplied with plenty of stores there remains only the task of packing them snugly for winter. This should be done early. In many cases the work will be done this month, but wherever the fall flow has continued brood-rearing so late that it is impossible to supply colonies with their requisite stores before October the packing will necessarily be delayed.

In these talks we have especially recommended the double-walled hive, but there may be a few who have purchased single-walled hives. If so, colonies in such hives in the north must be wintered either in packing cases or in the cellar.

Cellar Wintering.

As previously stated no one should attempt wintering in the cellar unless he has good stores and a dry, well-ventilated cellar that may be kept dark and at an even temperature of about 45 or 50 degrees. The entrances should not be entirely closed, but should be made small enough so that the mice cannot enter the hive. In general colonies should be put in the cellar just after their last fall flight and taken out in time for the first natural pollen. The time of putting in the cellar is discussed at some length in this issue of *Gleanings* under the title, "Cellar Wintering".

Packing Cases for Winter.

Single-walled hives that are not wintered in the cellar should be wintered in packing cases. These may be made to hold from one to four colonies and should provide for from five to six inches of packing on the sides and top and four underneath. Almost anyone can construct such a case himself from any cheap lumber he may happen to have. The entrance of the hive should be connected with the entrance of the case by means of a wooden bridge that prevents the packing from closing the entrance; for it is important that the bees have a chance for flight on warm winter days. With such packing as this an entrance of five $\frac{3}{8}$ -inch holes will probably be sufficient and in very cold weather two or three of these may be closed.

Wintering in Double-Walled Hives.

In our last issue we stated that those who do not intend to open their hives in the spring should leave all the frames in the hive, but those who are willing to take the extra trouble of examining their colonies and giving them more stores if necessary in the spring, might contract the brood-chamber by removing two or three frames and placing a division-board next to the space left vacant. This space, which should

TALKS TO BEGINNERS

By Iona Fowls

be on one of the most exposed sides of the hive, should now be filled in with good packing such as lightly packed forest leaves, chaff, or shavings.

On top of the frames may be placed a mat or canvas just as large as the top of the hive, the mat being held up from the frames by a few small sticks placed crosswise of the frames so that the bees when in need of more honey may have a chance during the cold winter to pass from one frame to another without leaving the top or warmest part of the hive to do so.

Above this, place a four-or-five-inch tray slightly smaller than the telescope cover, so that the cover will slip over it readily. On the bottom of the tray burlap is fastened by means of wooden strips nailed on the lower inside edges, the burlap being left quite baggy in order that the tray will fit tightly to the top of the hive, thus preventing the wind from blowing in under the tray. About the best packing to use in this tray is dry well-packed forest leaves.

An entrance of $\frac{3}{4}$ inch by two or three inches will be large enough. Hives should face away from the prevailing winds and should tilt slightly forward so that no water may collect inside. Considerable protection from the cold will be offered by a windbreak of shrubbery or high fence with two-inch spaces between the boards so that the force of the wind may be more or less broken up before reaching the hive.

Care During the Winter.

If the colonies have been prepared as we have advised, they will need no further attention during the winter months. If one's neighbors wish to go in the dead of winter with snow waist-high and take a peek inside the hive just to see if the bees are still happy, or, if they wish to shovel the snow away from the entrance and then fool around the entrance trying to poke out dead bees, why, just let them; but don't you ever be guilty of it. It is too costly an amusement, and you will take so much more pleasure next spring with live colonies than you possibly could with dead ones.

The Last of Our Talks.

This concludes our series of "Talks to Beginners," but let the beginners all remember that we are greatly interested in their success and shall always be pleased to answer any questions addressed to *Gleanings in Bee Culture*. Lack of space prevents us from publishing more than a small fraction of these questions in our "Gleaned by Asking" department, but we are very glad to answer the rest by personal letter. We sincerely hope that our readers will feel free to take advantage of this offer.

I WANT to tell you a story, friends, that I have told you before—at least I have partially told it before. There is a particular reason now why I wish to tell it again. Something over 45 years ago, when this journal was first started, and the news had got abroad that I secured a barrel of honey from one

colony of bees in one season,* I had a good many visitors; and, as I was a very busy man, it was sometimes a little hard for me to give each newcomer the time and attention I should have been glad to give. Well, one morning when I was especially busy, and I think the bees were busy also, a well-dressed nice-looking young man called and was very anxious to see my bees and ask me questions. He informed me at the outset that he was a runner for a music-publishing house in Cincinnati. He had gotten hold of a copy of our little journal and was full of enthusiasm regarding bee culture. He said something like this:

"Mr. Root, I have a very good salary, and I suppose I ought to be contented to keep on with my present occupation; but it keeps me away from home. If I could be with my wife and child and just make a *living* keeping bees I would be satisfied. Do you think it possible for one to do so provided he would be satisfied with a very small income? Of course I would progress as I learned by experience; but I should not be worried if I did *not*, at the start, even make a living."

*In my review of volumes 1 and 2 I discovered that, even at that early date, I was not the only man who had secured "a barrel of honey," from one colony of bees in one season. Here is what I found on page 5 of *Gleanings for January 1873*:

Henry Hart of Palmer, Mich., writes:

"That swarm that had given us 400 pounds when I wrote you has since given us 100 pounds of fall honey, making a good 500 in all. Our surplus will not come much, if any, short of 3000 pounds from 11 swarms—no increase of swarms."

I afterward visited Mr. Hart and didn't we two have a big time in talking over and comparing our experiences? As I had been writing for several years for the *American Bee Journal*, Mr. Hart may have been a pupil of mine. I can not remember now, it was so long ago. I wonder if he is still alive; and if not, are any of his children still keeping bees?



Come ye after me, and I will make you to become fishers of men.—Mark 1:17.

He which converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins.—James 5:20.

Ho, every one that thirsteth, come ye to the waters, and he that hath no money; come ye, buy, and eat; yea, come, buy wine and milk without money and without price.—Isa. 55:1.

I do not know just what answer I made. After giving him what information I could, a man drove up with a horse and buggy to take me out on a trip hunting wild bees. The A B C book had been started, and I had got where I wanted to write up bee-hunting. When I began that book I de-

cided to put nothing in it from hearsay. Every topic was to be treated from personal experience if it were a possible thing. There was a veteran woodman living near us who, I was told, was quite expert in hunting bee-trees and taking out the honey. I had agreed with him to go out on a trip that very morning, and he was on hand with his tools and appliances. By the way, when I was introduced to the stranger I suppose he gave me his name; but I was so busy I did not take pains to remember his name nor usually those of a great part of my visitors. As I was preparing to step into the buggy, putting out my hand to the stranger, I told him of the proposed trip and asked him to excuse me under the circumstances. I was a little surprised to hear him say:

"Why, Mr. Root, can't I go along too?"

As there seemed to be no particular objection, and my bee-hunting friend said he guessed three could ride all right, we started off. This bright well-dressed stranger was rather short and pretty well up in avoirdupois, and so I suggested that he might get rather tired climbing over logs, getting thru brush, etc., but he said he guessed he could stand it. Let me digress a little right here.

My life has been pretty well given to hobbies, as you may know, and sometimes I have more than one hobby at a time. I do not know just how it came about; but at that particular time I was taking music lessons, and a bright young lady was my teacher. I had progressed far enough to be taking little exercises on a sort of melodeon. Well, while we were out in the woods climbing over the logs I absent-mindedly began whistling a little melody I had been practicing on that morning.

The stranger finally remarked, "Mr. Root, that thing you are whistling is rather pretty; don't you think so?"

I stopped and looked around and then remembered that I was whistling the very thing my teacher had been trying to teach me just a few hours before. I replied, "Yes, I do think it is very pretty indeed. It is what my music teacher gave me for a lesson this morning." To my astonishment he replied:

"Well, Mr. Root, it gives me great pleasure to hear you say so, for the reason that that little exercise is one I composed."

I do not think I made any reply; but I stopped and looked him over from head to foot. I did not say anything by words, but my mental comment was something like this:

"Did you ever! And that nice-looking chap has the 'cheek' to claim that *he* composed that melody."

I dropped the subject for the time and perhaps I was not very sociable on the trip home. By the way, I should state that we found a bee-tree which was cut at the proper season later on. When we got back to my place I put out my hand and was about to ask the stranger once more to excuse me; but it seems he was not quite ready to be dismissed. In just a few words he said something like this:

"Mr. Root, I really beg pardon for hindering you further; but I have a special reason for wanting to see that little instruction-book that you are using."

I replied, "certainly." But I left him standing at the gate while I went in and picked up the book from the melodeon. He turned over to the exercise and said something as follows:

"Mr. Root, do you see that star at the end of the title of the little exercise in question?"

"To be sure, I see it. It refers to something at the bottom of the page."

"Will you be kind enough to read the line in fine print at the bottom of the page?"

This is what I read: "Composed by Dr. C. C. Miller, Marengo, Ill."

Then I looked up and said, "Well, what of it?"

"Why," pointing his thumb toward himself, "I am Dr. Miller, and this exercise was furnished for Root & Cady, publishers, Chicago."

Just then, as the slang phrase has it, I "sat up and took notice." Then he added something like this:

"Mr. Root, from the way your manner changed out in the woods you thought I

was untruthful; but I decided to say nothing more about it until I could see your book."

"Dr. Miller, I humbly beg your pardon. I *did* think it was a little cheeky for you to claim that exercise as your own composition, and it just now occurs to me that you can probably play the exercise for us."

It was dinner time, and I think Mrs. Root and some guests were waiting a little impatiently for me to dismiss the stranger and come to dinner; but as our instrument was close by I invited him to come in and play the exercise for me; and then and there commenced my lifelong acquaintance with Dr. C. C. Miller. I think I asked him to give us a little more, and pretty soon Mrs. Root, her guests, and everybody else were listening to Dr. Miller's singing. Among other things he gave us such wonderfully inspiring old hymns as only Dr. Miller can give and did give. Among others was the old hymn, "Lead Me to the Rock, that is higher than I."

After entertaining us as he did, Mrs. Root, of course, insisted that he should stay to dinner; and we spent a busy afternoon; and he not only stayed to supper but late into the night. A young college professor, a relative of Mrs. Root, was with us; and as we were short of beds Mrs. Root suggested that we should be exceedingly glad to have Dr. Miller stay with us over night, if he and the professor could agree to sleep in one bed. This was done. Notwithstanding the pleasant visit that we had had, I could not quite get over the suspicion that the stranger had planned all this in order that he might sell us a piano, or something in that line; and when it came time for parting, before leaving he said, something as follows:

"Mr. Root, much as I love bee culture and outdoor pursuits under the great blue skies above, there is one other thing that I love more, than even the bees and flowers."

At this juncture I said to myself, "There, old chap, I knew it was coming sooner or later." But of course I waited until he explained further. Now, Dr. Miller has said several times that he has no recollection of what I declare followed; but this only illustrates the meaning of the beautiful passage where it says, "Lord, when saw we thee a hungered or thirsty, or a stranger, or naked, or sick, or in prison, and came unto thee?" Dr. Miller was so much in the habit (and I hope he is yet) of "fishing for men," as we have it in our first text, that he has quite forgotten all about it; but this, as nearly as I can recall, is what followed; and I am sure I am not mistaken, for it is one of the most important factors in the

shaping of my life and my life work from that time to this:

"Mr. Root, I have been strongly attracted to you by your writings in the American Bee Journal and your little monthly, Gleanings in Bee Culture. You have a rare gift of getting people to listen to you; and no wonder, for the work you are doing is attracting a great deal of attention all over the land. Now, I *did* come here to learn about bees and bee culture; but I came more with the hope that I might suggest to you that if your little journal would hold up the Lord Jesus Christ before a suffering world it would do still *more* good than you are doing to develop the bee and honey business."

At this I replied:

"Why, Dr. Miller, there has never been anything in our journal in any way against the Lord Jesus Christ."

To the above he answered:

"He who is not for me is against me."

I stood rebuked; and just now, before dictating this Home paper, I have gone back thru the pages of volumes 1, 2, and 3 to see if there was not just a faint intimation in regard to "the Lamb of God that taketh away the sin of the world." I could not find anything of the kind—not a word of thanksgiving or praise to the great Father above who gave us the bees and the flowers and the sunshine. I do not think I promised Dr. Miller anything; but to make amends, as far as possible, for my neglect as shown in the early volumes of Gleanings, not only in every issue but on almost every page there is some reference, more or less direct to the great Father and to his only Son who *died* that *we* might *live*. Yes, the bright young stranger, on that eventful morning, *did* have "something to sell," but it is expressed in our last text, "without money and without price."

My lifelong friend Dr. Miller, as most of you know, has just recently, on account of age and failing health stopped writing for Gleanings. I think we have had more or less from him in almost every issue of our journal for 45 years. Just a few days ago I wrote him as below:

Dr. C. C. Miller,
Marengo, Ill.
My dear old Friend:

I don't know why it is, but for some time back my mind has reverted again and again to the time when you and I first met. Strange things have happened during all these years. Little did either of us know what was to be the outcome of that acquaintance when we tramped off bee-hunting and I whistled that little exercise of your composition. I think that you said that day if you could just make a living keeping bees; stay at home with your wife and boy, etc., you would be quite happy. Well, that prayer (I think perhaps we might call it a prayer) has come to pass; and you said, too, you wanted to see my ability as a writer or teacher,

used in spreading not only bee culture, but the glorious news of Christ Jesus, our Lord and Savior. A part of a hymn, just one stanza, came to my notice just a few days ago. Here it is:

"From sinking sand He lifted me,
With tender hand He lifted me,
From shades of night to plains of light,
O praise His name *He* lifted me!"

That little bee journal has been used after a humble fashion to glorify His name, and it's still doing it. I don't know how long it will last. May God be with you and the good friends in your home. No answer is needed to this, unless you are quite able; but I should be very glad indeed for a brief word from you or your friends to let me know how you are getting along in your old age. In some respects I really enjoy growing old. It relieves me from many responsibilities; but I am wondering how long I shall be able to read and write and get about and make garden and grow the *new Annual sweet clover*—one of the dear Lord's latest and most precious gifts!

As ever,

Your old friend and co-worker,

July 30, 1920.

A. I. Root.

By the way, are you able to sing nowadays? I would travel a long ways to hear you sing once more, "The Rock that is higher than I."

As ever,

Your old friend and wellwisher,

A. I. R.

In response to the same he replies as follows:

Marengo, Ill., Aug. 7, 1920.

My good friend A. I.,

It seems good to get a letter from you. Makes me recall the first time I ever saw you, when we slept together and you talked till pretty late about bees and about having sap from maple trees go directly to the hive. But you didn't put your night-cap in my pocket as you did later on when we slept together at conventions.

At that time I didn't expect ever to be living in my ninetieth year as I am at present. And altho the years cannot be many until I enter the better world I find just as much enjoyment in this life as I did fifty years ago. Altho my weakened heart allows me—rather compels me—to walk softly all my days, yet I am free from pain and enjoy life to the full. I work quite a bit every day, and do a lot of resting. Today I've been cutting burdocks and cultivating gladioli. I had worked up quite a stock of gladioli, disposing of most of the flowers by sending them to the poor of Chicago, but when told I never could do much hard work again last fall, I disposed of some 5000 and have only 2000 left to play with. My special enjoyment is in the new varieties originated by myself, some 300 or more varieties. I rather think I've more fun with them than you do with annual sweet clover. That's only an adopted child of yours, while these gladioli are my own babies. Raising new varieties from seed is quite a gamble; if one gets one out of a hundred worth keeping one is fortunate. I have been quite fortunate.

Yes, I can sing nearly as well as ever, and it would be a delight to sing for you "The Rock that is higher than I", only I'd have to brush up on the words. Come and see me when I get settled in the mansions *prepared for me*.

Blessings on you.

C. C. Miller.

In closing it may be well to consider how far Dr. Miller ever realized his early ambition of being able to support his family by bee culture alone. For several seasons after that first acquaintance he had the usual-ups and downs; and, as I remember, they were mostly downs; in fact, I almost began to wish he would give it up; but he stuck to it thru thick and thin. Now listen to this, which I get from page 298

of his book, "Fifty Years Among the Bees."

In the year 1913 he averaged a little more than 266 sections per colony from 72 colonies, spring count. Of course much greater results—that is, in the number of pounds—have been secured of *extracted* honey; but I do not now recollect any better record from comb honey. Let us figure a little. If he received even 20 cents a section for his comb honey (and I do not know but he got as much as 25) it would be over \$50 for each colony.

This illustrates the wisdom of hanging on to your chosen pursuit, thru thick and thin, good seasons and bad. This one yield was secured in spite of the fact that he was, during that very season, fighting (at least to some extent) European foul brood. He thinks that, if it had not been for this disease, he could have done at least a little better. Just think of it, friends; a honey crop that sold for between \$3,000 and \$4,000 from an apiary of only 72 colonies, spring count!

P. S.—Our readers will doubtless perceive in reading the above that it was written before Dr. Miller's death. In fact, it was all in type when we received the sad news that he had already passed over to the "heavenly mansions" alluded to in the last words of his letter. Further particulars in regard to his death will be found elsewhere in this issue.

* * *

THE NEW ANNUAL SWEET CLOVER UP TO DATE

We are still sending out seed and still planting seed and transplanting plants here in Ohio. The question is often asked, "If the seed is sown so late that it does not have a chance to bloom, will it winter over, say here in Ohio?" It will do so all right in Kentucky, Virginia, and other States still further south. But I wish to give the matter a further test right here in Ohio. The question is also asked if it will pay to use manure and other fertilizers in addition to lime. To test this I made a small bed and gave it a heavy application of old well-rotted manure. This was chopped up and thoroly mixed with the soil. Then to ascertain if there was any harm in giving too much lime, I raked in the lime until the ground was absolutely white. I did not know but it would kill the seed and plants; but I am glad to tell you that that little bed of plants is now just booming. Some of them are now over a foot high, and "just growing like weeds." When I go back to my Florida home I expect to carry along a lot of the plants and have the matter fully tested during the winter time in southern Florida.

PROBABLE PRICE OF THE NEW CLOVER SEED FOR 1921.

A good friend sent me the clipping below which was taken from some periodical published in Iowa.

BIG PRICE FOR CLOVER SEED. . . .
SHENANDOAH, IA., Aug. 20.—The Henry Field Seed Co. of this city has just sold twenty bushels of seed of the Professor Hughes new annual white sweet clover to the DeGraff Canning Co., DeGraff, Ohio, at \$300 a bushel, or \$5 a pound. Delivery is to be made as soon as the seed is harvested this fall.

For two years past I have urged seedmen to "sit up and take notice" in regard to this "new revolution in agriculture," as the Rural New-Yorker has it. It seems the Henry Field Seed Co. were the only ones to catch on. If any other seed catalog anywhere has mentioned or offered the seed for sale, I shall be glad to have a notice of it and I will give them credit.

Six thousand dollars for clover seed that grew on six acres of land is something worth while. See cut of Field's plantation on p. 560 of our last issue.

* * *

SCARIFIED SEED THE BEST.

I am sending a clipping I tho't would interest you, if you had not seen it in the daily papers.

Last fall I received a package of annual sweet clover seed from the A. I. Root Company. About a week after sowing it this spring, I got from Ames, Iowa, a small package of scarified seed, that came up before the other. One plant four months from sowing was 7 ft. 6 in. high.
Exira, Iowa, Aug. 26, 1920. Jno. Edwards.

* * *

GROWING WILD IN ALABAMA.

Under *separate cover* I am sending you a few plants of the "Annual Sweet Clover," thinking that they may be of interest to you. These plants were growing wild. The large stalk measured nine feet high when pulled; it grew in rich, moist bottom land; you will note the difference in the root growth. The other plants are the second growth this season, the first growth being cut for hay before it was in bloom, about July 10th. You will notice where the old stock had been cut, by the old, dried-up stub; and what is most interesting is how the plant branched out from the old stub. In a field of about two acres of nearly solid growth, I find most of the plants have branched out like the sample sent you.

I have also sent Prof. Hughes, Ames, Iowa, one very tall stalk, the largest I have found to date. It had a spread of branches of 5½ feet, and the root system was most interesting.

Allenville, Ala., Sept. 2, 1920. E. Eggeman.

* * *

I thought it might be interesting to you to know that I am one of the persons Prof. Hughes, in his letter of July 2 to Mr. A. I. Root, spoke of as being interested in the annual white sweet clover growing here. In fact, I am the one that sent him samples of plants and established the fact that the annual is growing wild here in this section. Well, Prof. Hughes came and spent some time at my house. We found him a most splendid gentleman, and he seemed to enjoy every minute of his two weeks' stay in this little village. While here he located several fields of the annual, containing in the aggregate more than 100 acres. It

is needless to say the discovery caused quite a little excitement and great enthusiasm for the annual. We have formed an association to be known as the "Alabama Annual White Sweet Clover Seed Growers' Association," to grow and market these seeds. We expect to market a few this year, and to plant a considerable acreage next year.

We feel that Prof. Hughes' visit among us has been of inestimable value to us all, and only wish he could come again.

Newbern, Ala., Aug. 28, 1920. F. A. James.

* * *

10 FT. 6 IN. HIGH.

The other day I cut one plant of that white sweet clover that measured 10 ft. 6 in.—"some clover" from one little seed. I planted some barley alongside of it, that is a little over 1 foot high. That white sweet clover is a wonderful plant. I think it grows well on poor land. If it is cut before it comes into bloom, it makes fine hay and grows much higher and faster than alfalfa. It is a good honey plant. The bees are working on it constantly, and some of it is coming into bloom all the time.

From the seed you sent us, I have got some sunflowers, one of which is 14 ft. high. If you stand under the sunflower and look up, it appears more like a small tree. Also, some of the yellow corn is 12 ft. high.

Locke, Calif., Aug. 16, 1920. O. J. Arfsten.

* * *

6 FT. 8 IN. IN 91 DAYS.

I saw in Gleanings a notice of your Sweet Clover growing 6 ft. in 100 days. That is fine, but I can beat it. I sowed a few seeds about June 1st and have plants now that are 6 ft. 8 in. tall in 91 days (will be in full bloom in a few days). Who can beat it?

Lawn, W. Va., Aug. 30, 1920. N. E. Duncan.

* * *

THE NEW CLOVER IN CALIFORNIA.

Last spring I purchased an ounce of the annual sweet clover seed from the Henry Field Seed Co. and planted it in five rows, ten rods long and three and one-half feet apart; but it is hard to tell where the rows are now. After looking at the picture on page 495 I went down to my sweet clover to make comparison, and found a great many plants over seven feet high, and I think decidedly more stocky; this was planted about the first of May, was irrigated and cultivated twice, and hoed once. I am sorry now that I did not use three or even four times the amount of land for this amount of seed, as it is entirely too thick to thrive, despite the fact that it looked as tho the lot of seed was largely immature. I expect to plant about five acres of this clover next spring. I have grown the Biennial sweet clover for several years, about five acres each year, and have 100 stands of bees. With best wishes to you and yours,

Montague, Calif., Aug. 8, 1920. L. H. Calame.

* * *

THE NEW CLOVER IN ITALY.

Last fall I was lucky enough to secure from the Henry Field Seed Co. two ounces of seed of the "annual white sweet clover." In January I shipped the seed to my father in Italy, asking him to pay it the best of his attention and care. Confident that you would be glad to hear something about the results my father has had from this seed, I am going to translate ad literam for you from his letter the following:

"The annual white sweet clover, sown on April 15, is today (July 29) already all in bloom. In spite of a stubborn drouth, of which nobody remembers the like, it has reached the height of one meter and 50 centimeters (5 feet). The bees rush to it all day long, from morning to sunset, and no

one of the farmers has the slightest idea of such plant bearing millions of small white flowers. I'll take the very best care in harvesting the seed."

I hope to be able to secure some more seed next fall to send to my country, so getting interested more persons in this very valuable plant, for which the agricultural world is indebted to Prof. Hughes as well as to you.

289 E. 151st St., New York City,

Aug. 24, 1920.

D. Barone.

* * *

THREE CLIPPINGS FROM DIFFERENT NUMBERS OF THE RURAL NEW YORKER.

The annual Sweet clover on our farm grew, by actual measurement, 8½ inches during the seven days ending August 7. This clover is not given special care or fertilizing. It is on land of usual good quality. We have never seen any legume grow as this does, and we feel more and more confident that our Northern farmers are to have in this crop the most useful manurial plant ever introduced. We do not speak of its value as a hay or pasture plant, altho that will be great; but as a crop for adding organic matter and nitrogen to the soil, and still permitting a money crop in the same season, this annual Sweet clover is a wonder.

During the seven days ending August 14 the annual Sweet clover growing on our farm grew a little over 11 in. It then stood 39 in. high, from seed put in the ground June 12. Perhaps you think we are making too much of this plant. We believe it is to prove the greatest manurial crop our Northern gardeners and fruit growers have ever known. Where Crimson clover will thrive this annual Sweet clover may not prove as valuable, but in most sections north of Philadelphia we regard it as a great acquisition, sure to change methods of farming and fertilizing in many sections. Here is a newcomer capable of adding to an acre about as much nitrogen as you can buy in 500 lbs. of nitrate of soda during the working days of late summer. We call anything capable of doing that a friend in need, and we feel like passing his name along to our friends.

During the week ending August 21 our annual Sweet clover reached a height of 45 inches—just 10 weeks after the seed was put in the ground. Its growth is by no means finished. No; we have not gone crazy over this clover. We never had a saner idea of what a new plant may do for us, and we want all our readers to understand something of its possibilities. As a manurial crop to follow early potatoes or other garden crops, we think this clover will prove remarkable. With an acre of this clover growing on good soil we should feel as if some kind-hearted neighbor had decided to come once a week and scatter a ton of manure over the acre. We have good neighbors, but not one has ever volunteered any such service. That kindly act has been reserved for the Hon. A. S. Clover. We nominate him for the congress of nitrates. It is reported that one canning company in the West has paid \$5 a pound for 20 bushels of this clover seed. This reminds us to caution readers about buying this seed from irresponsible dealers. You cannot distinguish the seed from that of the old two-year clover.—*Rural New Yorker*.

"NEITHER SHORTER HOURS NOR BIGGER PAY."

"Of all the workers in the known world today, these little toilers are going on as of yore, asking no reduction of working hours nor higher pay, to help increase, rather than diminish, the high cost of living. They work cheerfully and contentedly in an old nail keg, or any old disgraceful box that may be offered them, or even in the hollow log that is found in many forests."

Our bee friends should keep in mind the above, which we clip from the *Rural New Yorker*.

Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued while they are in good standing.)

W. M. Peacock, W. B. Crane, J. M. Gingerich, Bert Smith, Geo. M. Sowarby, Julius Victor, Jasper Knight, W. J. Forehand & Sons, J. E. Wing, E. B. Tyrrell, J. W. Romberger, Samuel Pitts, W. T. Perdus & Sons, J. H. Haughey, D. T. Gaster, F. R. Davis, Hazel V. Bonkemeyer, V. R. Thagard, I. F. Miller, A. H. Newman, Fred Leininger & Son, O. E. Tulip, John Nebel & Son Supply Co., D. A. Davis.

HONEY AND WAX FOR SALE

Beeswax bought and sold. Strohmeyer & Arpe Co., 139 Franklin St., New York.

FOR SALE.—Very choice white-clover extracted honey in 60-lb. cans.

Noah Bordner, Holgate, Ohio.

FOR SALE.—A1 quality white sweet clover honey, 60-lb. cans, 22c f. o. b.

Joe C. Weaver, Cochrane, Ala.

FOR SALE.—Clover and buckwheat honey in any style containers (glass or tin). Let us quote you. The Derooy Taylor Co., Newark, N. Y.

FOR SALE.—Buckwheat honey in 60-lb. cans. Good quality and clean.

E. L. Lane, Trumansburg, N. Y.

FOR SALE.—Extra nice clover honey in 60-lb. cans at \$30.00 per case of two cans.

Seward Van Auken, Delanson, N. Y.

FOR SALE.—Finest Michigan basswood and clover honey at \$30.00 per double case of 60-lb. cans. Sample 25c. A. S. Tedman, Weston, Mich.

FOR SALE.—Extra quality clover honey in cans and barrels. Write for special prices.

F. W. Lesser, East Syracuse, N. D. No. 3, N. Y.

FOR SALE.—White honey in 5-lb. pails, 12 pails to case, \$16.20 per case, f. o. b. here.

R. Conn, Roaring Branch, Pa.

FOR SALE.—Buckwheat honey in new 60-lb. cans, two to the case and 160-lb. kegs.

B. B. Coggs, Grotton, N. Y.

FOR SALE.—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-lb. cans.

P. W. Sowinski, Bellaire, Mich.

FOR SALE.—Extracted clover honey in car lots. Send for sample if interested in car lots.

J. D. Beals, Oto, Iowa.

RASPBERRY HONEY for sale, left on the hive until thoroughly ripened by the bees. It is thick, rich, and delicious. In new 60-lb. cans. Price, two cans in one case, \$30.00. One can, \$15.50. Sample, 25c.

Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE.—We have a very choice lot of white clover honey at 25c per lb. in 60-lb. cans; also some very choice fall honey at same price.

M. V. Facey, Preston, Minn.

FOR SALE.—New crop extracted clover honey two 60-lb. cans to case, \$30.00 per case; in 5-lb. pails, \$1.50 per pail; packed 12 pails to case or 30 to 50 pails per barrel. H. G. Quirin, Bellevue, O.

FOR SALE.—Well-ripened clover and basswood honey (light) in 60-lb. cans. Ton lots or less, 25c. cash with order.

D. L. Woodward, Clarksville, N. Y.

FOR SALE.—Clover and buckwheat extracted honey. Well ripened. Put up in new 60-lb. cans and 5 and 10 lb. pails.

H. B. Gable, Romulus, N. Y.

FOR SALE.—Clover, basswood or buckwheat honey, comb and extracted by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey.

C. B. Howard, Geneva, N. Y.

COMB HONEY.—Finest western white clover, 2 dozen plain sections to case, six cases to a carrier, fancy and heavy No. 1 grades, \$49.00 per carrier, f. o. b. New York.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE.—Extracted clover honey in 60-lb. cans, \$27.50 per case of two cans. Selected No. 1 comb honey packed eight cases in a carrier, \$7.50 per case. Prices f. o. b. here.

J. D. Beals, Oto, Iowa.

FOR SALE.—Finest Michigan raspberry, basswood, and clover No. 2 white comb, \$6.50 per case; No. 1, \$7.00; fancy, \$7.50; extra fancy, \$8.00; 24 Danz. sections to case. Extracted, 60-lb. can, 25c per lb.

W. A. Latshaw Co., Clarion, Mich.

FOR SALE.—Finest quality white-clover extracted honey, well ripened and of good flavor, put up in new 60-lb. and 12-lb. cans, and 10- and 5-lb. pails. Also some nice comb honey.

R. C. Ortleib, Dolgeville, N. Y.

FOR SALE.—Light Haitian honey, 400-lb. barrels, 19c lb.; 60-lb. cans white sweet-clover honey, 23c lb.; new white sage, 25c lb., f. o. b. New York. 60-lb. cans shipped two in a case.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

EXTRACTED HONEY.—New white sage, 60-lb. cans, 24c a lb.; white Arizona, 60-lb. cans, 20c a lb.; white N. Z. clover, 56-lb. net cans, 23c a lb.; L. A. Haitien, 400-lb. barrels, 18c a lb.; buckwheat honey, 160-lb. kegs, 20c a lb. Cans two to a case f. o. b. New York. Sample sent for 20c.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE.—Clover extracted honey of unsurpassed quality: new cans and cases, prompt shipment. You will be pleased with "Townsend's quality" extracted honey. Not a single pound extracted until long after the flow was over; thus the quality. Would advise intending purchasers to order early, as we have only a half crop. Address with remittance.

E. D. Townsend & Sons, Northstar, Mich.

HONEY AND WAX WANTED

Quote me your best price on clover honey in 60-lb. cans.

E. C. Pike, St. Charles, Ills.

WANTED.—Clover extracted honey in 60-lb. cans.

I. J. Stringham, Glen Cove, N. Y.

WANTED.—Extracted and comb honey. Carload or less quantities. Send particulars by mail and samples of extracted.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

BEESWAX WANTED.—For manufacture into **SUPERIOR FOUNDATION.** (Weed Process.)
Superior Honey Co., Ogden, Utah.

WANTED.—Honey, comb and extracted. State quantity and price, and send sample of extracted.
A. W. Yates, Hartford, Conn.

WANTED.—Bulk comb, section and extracted honey. Write us what you have and your price.
J. E. Harris, Morristown, Tenn.

BEESWAX WANTED.—We are paying higher prices than usual for beeswax. Drop us a line and get our prices, either delivered at our station or your station as you choose. State how much you have and quality. Dadant & Sons, Hamilton, Illinois.

WANTED.—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance.
The A. I. Root Co., Medina, Ohio.

We buy honey and beeswax. Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section, and sections to case. Extracted honey, quantity, quality, how packed and send samples.

Chas. Israel Bros. Co., 486-490 Canal St., New York City.

FOR SALE

HONEY LABELS.—New designs. Catalog free.
Eastern Label Co., Clintonville, Conn.

FOR SALE.—A full line of Root's goods at Root's prices.
A. L. Healy, Mayaguez, Porto Rico.

FOR SALE.—40 10-frame hives, supers, wood-and-wire excluders, etc. Minard Rote, Dakota, Ills.

FOR SALE.—**SUPERIOR FOUNDATION**, "Best by Test." Let us prove it. Order now.
Superior Honey Co., Ogden, Utah.

FOR SALE.—Barron strain S. C. White Leghorn cockerels, 5 months old, 297-egg strain. Write to R. S. Harker, Hidalgo, Ills.

FOR SALE.—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, O.

How many queens have you lost introducing? Try "The Safe Way" push-in comb introducing cage, 50c. Postpaid. O. S. Rexford, Winsted, Conn.

ROOT'S BEE SUPPLIES.—For the Central Southwest Beekeeper. Beeswax wanted. Free catalog.
Stiles Bee Supply Co., Stillwater, Okla.

PORTER BEE ESCAPES save honey, time and money. Great labor-savers. For sale by all dealers in bee supplies.
R. & E. C. Porter, Lewistown, Ills.

SAFETY FIRST! Use Dahl's famous push-in comb queen-introducing cage, satisfaction guaranteed, \$1.00 postpaid.
H. J. Dahl, 1272 Michigan Ave., Buffalo, N. Y.

FIVE-GALLON SECOND-HAND CANS.—Buy supply now for next season as price advancing. In good condition, two to a case, 50c per case or 100-case lots at 40c per case f. o. b. New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE.—I have a lot of standard $4\frac{1}{4} \times 1\frac{1}{2}$ comb honey supers complete with sections and full sheets, for sale or will trade for shallow extracting frames or supers.
Edw. A. Winkler, Joliet, R. D. No. 1, Ills.

FLORIDA BEEKEEPERS.—You can save money by placing your order for Root's Bee Supplies with us. We carry the complete line. Will buy your beeswax. Write for catalog.
Crenshaw Bros. Seed Co., Tampa, Fla.

FOR SALE.—Good second-hand double-deck comb-honey shipping cases for $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ sections, 25c per case, f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

CANADIAN BEE SUPPLY & HONEY CO., Ltd.—73 Jarvis St., Toronto, Ont. (Note new address.) We have made-in-Canada goods; also can supply Root's goods on order. Extractors and engines; **GLEANINGS** and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—2 H. P. boiler, \$25.00; $2\frac{1}{2}$ H. P. engine, \$25.00; 6 H. P. boiler, \$40.00; 4 H. P. engine, \$35.00. Pump jack, new, \$6.00. These are worth twice the money.
J. W. Utter, Amity, N. Y.

FOR SALE.—1 wax press, 300 frames with foundation, 50 stands of bees, 8-frame hives and supplies, \$18.00 each, or best offer, 50 supers, 1 camera. No disease. Must sell by the 25th.
Hickory Shade Apiary, H. D. Hopkins, Prop., Otterville, Mo.

FOR SALE.—Root's Extractors and Smokers, Dadant's Foundation, and a full line of Lewis' Beeware. Our new price list will interest you. We pay 38c in cash, and 40c in trade for clean yellow beeswax delivered in Denver. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

FOR SALE.—25 Jumbo 10-frame hives, metal tops; 35 10-frame hives, metal tops; 30 empty 10-frame hives, wood tops; 30 empty 8-frame hives, wood tops; 40 bee-escape boards and excluders; 34-lb. Jumbo foundation; 30-lb. light brood foundation. Hives painted white, in good condition, with full sheets of foundation. Requeened this year, Italian bees. Reason for selling, am moving to Florida for other business. Will sell at first reasonable offer. C. D. Shinkle, Williamstown, Ky.

FOR SALE.—Closing out my business. Over-land truck, new, perfect condition, \$450. Solid tires in rear; 65 comb-honey supers, new, \$1.00 each; 32 shipping cases, new, 25c each; 12 wood-and-wire 10-frame excluders, 25c each; 7 metal top ten-frame hives with wired sheets foundation, \$5.00 each; one Root two frame automatic extractor, \$10.00. All Root standard goods. 34 colonies bees, goldens, at \$10 each. Will sell all or part of above.
S. H. Burton, Washington, Ind.

WANTS AND EXCHANGE

WANTED.—Novice extractor immediately. State price.
Minnie Michel, Golconda, Ills.

WANTED.—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax.
Superior Honey Co., Ogden, Utah.

WANTED.—Two-frame extractor in good condition, reasonable.
A. L. Soggs, 3604 Bader Ave., Cleveland, Ohio.

BEEES WANTED.—300 colonies, 10-frame Langstroth hives preferred. Write stating particulars as to price, condition of bees, etc., to
J. W. Hornick, Dresden, R. D. No. 4, Ont. Can.

OLD COMBS WANTED.—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our new 1920 catalog. We will buy your share of the wax for cash or will work it into foundation for you.
Dadant & Sons, Hamilton, Illinois.

WANTED.—Full drawn out combs, standard-sized frames, free from disease.

N. N. Banning, Hartland, Conn.

WANTED.—Manager for Michigan Honey Producers' Exchange. In answering state qualifications and previous experience.

B. F. Kindig, E. Lansing, Mich.

WANTED.—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

REAL ESTATE

FOR SALE.—On account of failing health will sell my home adjoining city of Denver, together with apiary of 80 colonies.

J. A. Everett, Edgewater, Colo.

FOR SALE.—Southern California ranch of 216 acres of land. 15 acres in bearing peach trees, early and canning varieties; 19 acres under ditch line, good citrus land; 25 acres grain land; balance 157 acres pasture with good spring; 90 colonies of bees in 9 and 10 frame hives, two-story and good Italian stock, average 120 lbs. per colony, spring count 1920. Plenty of forest reserve land joining, making a good bee range. Small house sheds and honey-house. Four miles from town and railroad, one mile from graded school. Price, \$10,000. Terms. Address owner.

Chas. F. Schnack, Escondido, Calif.

BEEES AND QUEENS

Finest Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

Hardy Italian queens, \$1.00 each.

W. G. Lauver, Middletown, Pa.

Golden Italian queens, untested, \$1.25 each; dozen, \$12.00. E. A. Simmons, Greenville, Ala.

When it's GOLDEN it's Phelps. Try one and be convinced. Virgins, \$1.00; mated, \$2.00.

C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE.—Italian queens, three-banded and Golden, untested, \$1.25 each; 6, \$6.50; 12, \$13.00. Now ready. G. H. Merrill, Pickens, S. C.

Queens of Dr. Miller's strain, untested, \$1.25 each; \$12.50 per dozen; tested, \$1.75 each; \$18.00 per dozen. Safe arrival and satisfaction guaranteed. Geo. A. Hummer & Sons, Prairie Point, Miss.

Golden queens ready April 15th. One queen, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100.00. Virgins, 75c each.

W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE.—6 colonies hybrids in 10-frame hives, wired combs, free from disease. All good workers. \$10.00 per colony. Write

F. E. Ebersole, Box No. 708, Port Arthur, Texas.

FOR SALE.—10 full colonies of bees in 10-frame hives (5 in L. hives). Price, \$80 until Nov. 1.

Clarence Locknow, Buskirk, R. F. D. 1, N. Y.

FOR SALE.—25 colonies, healthy Italian bees, and all supplies; new 10-frame hives, supers, excluders, extractor, tanks, etc. Just sold my property and will sell the bees cheap. Write

H. A. Mau, R. D. No. 1, Lake Beulah, Wis.

FOR SALE.—100 swarms of bees, 75 of which are in 8-frame hives, mostly new, a good many wired frames, requeened with Miller and Davis queens; 25 in 10-frame hives, mostly hybrids.

T. S. Hurley, Garwin, Iowa.

FOR SALE.—50 colonies, also extra hives and separator. Will give separator to the purchaser of the apiary. J. T. Haley, Jr., Grayson, Ky.

PHELPS' GOLDEN QUEENS will please you. Mated, \$2.00. Try one and you will be convinced. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE.—Full colonies of bees (with Italian queen) in 10-frame Root Co. hives, \$14.00 each; two for \$27. J. W. Harrison, White Pigeon, Mich.

BEEES BY THE POUND.—Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

QUEENS OF QUALITY.—Our Hand-Moore strain of three-banded Italians are beautiful, and good honey-gatherers. Bred strictly for business. Untested, \$1.50; half-dozen, \$8.00. Select, \$2.00.

W. A. Latshaw Co., Clarion, Mich.

PURE ITALIAN QUEENS.—Not the cheapest, but the best we can grow; bright yellow, with clean bill of health; sure to please; such as we use in our own yards. Untested, \$1.25; \$14.00 per dozen.

J. B. Notestein, Bradentown, Fla.

Highest grade three-banded Italian queens. Virgins, 75c each; untested, each, \$1.25; 6, \$6.50; 12, \$12.00; 50, \$47.50; nuclei, \$3.00 per frame, queens extra. No disease, and satisfaction guaranteed.

A. E. Crandall, Berlin, Conn.

FOR SALE.—1920 prices for "She suits me" queens. Untested Italian queens, from May 15 to June 15, \$1.50 each. After June 15, \$1.30 each; \$12.00 for 10; \$1.10 each when 25 or more are ordered.

Allan Latham, Norwichtown, Conn.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, \$1.00; mated, \$2.00.

C. W. Phelps & Son, Binghamton, N. Y.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; May to August, untested, each, \$2.00; 6, \$8.00; dozen, \$15.00; tested, \$4.00; breeders, \$5.00 to \$20.00. J. B. Brockwell, Barnetts, Vt.

We have enlarged our queen-yard considerably. We can take care of orders better than ever, large or small. Untested queens, 1.50 each, or \$15.00 per dozen. J. A. Jones & Son, Montgomery, R. D. No. 1, box 11a Ala.

We are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.

Sarasota Bee Co., Sarasota, Fla.

FOR SALE.—Mr. Beeman, head your colonies of bees with the best Italian stock raised in the South. One queen, \$1.25; 12 queens, \$14.00. One pound of bees with queen, postpaid, \$6.00. Safe arrival and satisfaction guaranteed.

M. Bates, Greenville, R. D. No. 4, Ala.

TESTED QUEENS.—Three-banded leather colored Italians, descended from the celebrated Moore strain. These queens are now one year or less old, right in their prime. Price, \$2.00 each. Safe arrival and satisfaction guaranteed. A few breeding queens, \$5.00 each.

Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE.—Pure Italian queens, golden or leather-colored, packages and nuclei; 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100; virgins, 50c each; packages 24 and under, \$2.25 per pound; 25 and over \$2.00 per pound; nuclei, 1-frame, \$4.00; 2-frame, \$6.00; 3-frame, \$7.50; queens extra. One-story 10-apiary colony with queens, \$12.00. Golden Star Apiaries, New Almaden, near San Jose, Calif.

DAY-OLD QUEENS at practical prices. Superior improved Italian stock. Mailed in safety introducing cages. Safe arrival guaranteed to any part of the U. S. and Canada. Send for circular. Prices, 1, 75c; 10, \$6.00; 100, \$60.00.

James McKee, Riverside, Calif.

FOR SALE.—180 colonies bees, also our former home consisting of about four acres, nearly new bungalow house, good sized barn, new garage and workshop, and honey house. This property located one mile from small village and is in the heart of the buckwheat region of Cayuga County. Fred D. Lamkin, Popular Ridge, N. Y.

The A. I. Root strain of leather-colored Italians that are both resistant and honey-gatherers. These queens and bees need no recommendation for they speak for themselves. Orders taken now for next season. Untested, \$1.50; select untested, \$2.00; tested, \$2.50; select tested, \$3.00. Circular free. For larger lots, write

A. J. Pinard, Morgan Hill, Calif.

FOR SALE.—75 colonies Italian bees in practically new 10-frame hives, well painted, combs drawn from full sheets of foundation, wired, free from disease. Investigation solicited. Also 100 10-frame supers of extracting combs, recently drawn from wired foundation.

Anthony Johnson, Benson Station, Omaha, Nebr.

QUEENS.—Select three-banded Italians. Reared from the best mothers and mated to choice drones. Ready to ship May 1. Untested, one, \$2.00; six, \$9.00; twelve, \$16.80. After June 1, one, \$1.50; six, \$8.00; twelve, \$14.00. Select tested, \$3.00 each. Write for prices per 100. Descriptive circular free. Hardin S. Foster, Dept. G, Columbia, Tenn.

ITALIAN QUEENS.—The Old Reliable three-banded Italians, the best all-round bee to be had. Queens ready to mail April 1, 1920. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May: Untested, \$1.50; 6, \$8.00; 12, \$15.00. Tested, \$2.25; 6, \$12.00; 12, \$22.00. Selected tested, \$3.00 each. Descriptive circular and price list free.

John G. Miller, 723 C St., Corpus Christi, Texas.

MISCELLANEOUS

Write for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.

FOR SALE.—Genuine White Annual Sweet Clover. Garden-grown on our grounds and guaranteed pure. New crop seed, 1 lb., \$5.00; ¼ lb., \$1.50; 1 oz., 50c, all postpaid.

Henry Field Seed Co., Shenandoah, Iowa.

HELP WANTED

WANTED.—Another good queen-breeder for season of 1921. W. D. Achord, Fitzpatrick, Ala.

WANTED.—Man to work with bees on shares or wages and assist with farm work. Irwin Bros., Currant, Nev.

WANTED.—Reliable queen-man for the next season, beginning January, 1921. A permanent position for the right party.

Ray C. Patten, Whittier, R. D. No. 2, Calif.

WANTED.—Industrious man, age 34, two years bee experience, some queen-raising experience, first-class man with auto, wants position with up-to-date beekeeper in western States only, Colorado or California preferred. Am looking for steady job. Open for engagement March 1.

Arthur Outzen, Harmony, Minn.

WANTED.—Beekeeper for apiary at Lilly Orchard, married man able to grade and pack fruit preferred. Come and get a job during apple-picking and size up the location. Can give work in orchard when not busy with bees.

H. W. Funk, Normal, Illinois.

SITUATIONS WANTED

WANTED to correspond with parties in the South wanting help with their bees from Dec. 1, 1920, to May 1, 1921.

Address Box Number 627, Aitkin, Minn. 259

"Special Crops" A high-class illustrated monthly journal devoted to the Growing and Marketing of Ginseng, Golden Seal, Senega Root, Belladonna, and other unusual crops. \$1.00 per year. Sample copy 10c. Address Special Crops, Box G, Skaneateles, New York



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 106 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

Sell Your Crop of Honey to

Hoffman & Hauck, Inc.
Woodhaven, N. Y.

No Lot too large or small, and Purchase your

Containers, Prompt Shipment

2 ½-lb. Pails, case 2 doz. \$1.90 each
Crates of 100 \$ 7.25

5-lb. Pails, case 1 doz. \$1.80 each
Crates of 100 \$11.00

10-lb. Pails, case ½ doz. \$1.60 each
Crates of 100 \$17.50.

5-gal. cans used 2 to case. 50c case

WHITE FLINT GLASS JARS, SCREW CAPS

Qt. Honey 3-lb. size 1 doz. cartons \$1.25 each
1-lb. " 2 doz. " 1.70 each
½-lb. " 3 doz. " 2.00 each

Our Food Page.—Continued from Page 608.

honey reveals the fact that even honey may be refined to the extent of removing some of its most valuable constituents. I have no doubt that extracted honey will always be used. Its convenience and long-keeping qualities in that form make it almost a necessity; and even extracted honey, we must remember, contains small quantities of the water-soluble B vitamin. But comb honey, because of its fat-soluble vitamin content, is worthy of being placed in the class with milk, cream, and other dairy products, eggs and the green, leafy vegetables, and I hope in the future it may be profitable for beekeepers to turn more largely to the production of comb honey.



HONEY

FINEST MICHIGAN
Raspberry, Basswood
and Clover comb and
extracted honey. Unexcelled for quality.

Crate 6 cases (24 sec.) Fancy Comb	\$45.00
Crate 6 cases (24 sec.) A No. 1 Comb	42.00
Crate 6 cases (24 sec.) Extra Fancy	48.00
Crate 6 cases (24 sec.) No. 2 comb	39.00
Two cans (120 lbs.) Extracted	30.00

Send Today for Free Sample.

W. A. LATSHAW COMPANY, Clarion, Mich.

QUEENS

Golden and three-band Italians. The kind that fill from two to four supers.

Untested, \$2.00 each; \$11.00 for 6; \$45.00 for 25. No discount for 50 or 100 lots. Tested, \$3.00 each; \$16.00 for 6. Send orders for queens as early as possible.

Full colonies (bees and queen) \$12.00 and \$15.00 for 8- and 10-frame Root Co. hives.

S. C. R. I. Red eggs for hatching (280 egg trapezoid strains) \$2.50 per 15. \$12.00 per 100.

MISS LULU GOODWIN, Mankato, Box 294, Minn.

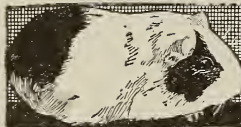
"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog.

THE BEST LIGHT CO.

306 E. 5th St., Canton, O.



Raise Guinea PIGS FOR US!

We need men and women, boys and girls everywhere to raise Guinea Pigs for us. We tell you where to get them, show you how and buy all you raise. Big opportunity for money making—Thousands needed weekly.

Easy to Raise—Big Demand No special knowledge, experience or equipment needed. They breed the year round—are very prolific—require but little space or attention. Pay better than poultry or squabs—cost less to house, feed, keep, easier raised—less trouble, market guaranteed.

Particulars, contract, and booklet how to raise **FREE** **CAVIES DISTRIBUTING COMPANY**
3145 Grand Avenue, Kansas City, Mo.
Largest Guinea Pig breeders and distributors in America.

Large, Hardy, Prolific Queens

Three-band Italian only. Pure mating and safe arrival guaranteed.

One, \$1.30; 6, \$7.50; 12, \$13.50; 100, \$110.00

Buckeye Bee Co., Lock Box 443 Massillon, Ohio

NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1926 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston, Mass.

INDIANOLA APIARY

Will furnish 3-banded Italian Bees and Queens as follows: Untested Queens, \$1.00; Tested, \$1.50. Nucleus, \$2 per frame, queen extra.

J. W. SHERMAN, VALDOSTA, GA.

ATTENTION

Pacific Northwest Beekeepers

We handle a full line of supplies for beekeepers, including Italian Queens. Write us your requirements and for our catalog B. It's free.

Spokane Seed Company, Spokane, Wash.

904 First Avenue

Mott's Northern-bred Italian Queens

Untested, \$1.00 each; \$12.00 per dozen. Select untested, \$1.25 each; \$15.00 per dozen. Select guaranteed, pure mated, \$1.50 each. Select tested, \$2.50 each.

Plans "How to Introduce Queens, and Increase." 25c
E. E. Mott, - - Glenwood, Mich.



"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.



Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 1083

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Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles. **THE EDWARDS MFG. CO.**
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Patent Counsel of The A. I. Root Co
Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C.

MASON BEE SUPPLY COMPANY

MECHANIC FALLS, MAINE

From 1897 to 1920 the Northeastern
Branch of The A. I. Root Company

Prompt and Efficient Service **BECAUSE—Only Root's Goods are sold.**
It is a business with us—not a side line.
Eight mails daily.
Two lines of railway.
If you have not received 1920 catalog send name at once.

QUEENS OF MOORE'S STRAIN OF ITALIANS

Produce Workers
*That fill the super quick
With honey nice and thick*

They have won a world-wide reputation for
honey-gathering, hardiness, gentleness, etc.
Untested queens \$1.50; 6, \$8.00; 12, \$15.00
Select untested..\$2.00; 6, \$10.00; 12, \$19.00
Safe arrival and satisfaction guaranteed.
Circular free.

J. P. MOORE, Queen Breeder
ROUTE 1 MORGAN, KY.

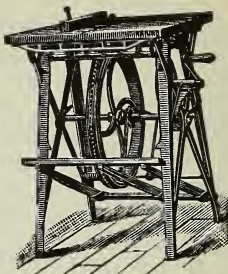
BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices

W. F. & JOHN BARNES CO
545 Ruby Street
ROCKFORD, ILLINOIS

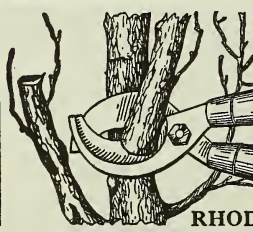


Southern Headquarters Three-Banded ITALIAN QUEENS

BY RETURN MAIL.

Untested, \$1.00 each; 12, \$11.50. Select
untested, \$1.25 each; 12, \$13.25.
Tested, \$1.75 each.

W. D. ACHORD,
Fitzpatrick, - - Alabama.



**RHODES DOUBLE CUT
PRUNING SHEAR**

Patented

RHODES

RHODES MFG. CO.,
528 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only
pruner
made that cuts
from both sides of
the limb and does not
bruise the bark. Made in
all styles and sizes. All
shears delivered free
to your door.
Write for
circular and
prices.

Sections! Sections!! Sections!!!

We have in stock an oversupply of the following sizes and are offering them at a big reduction, WHILE THEY LAST. These sections are of a very good grade, and mostly standard sizes. For lack of warehouse room we are sacrificing them at the following low prices:

No. 2.—4 1/4 x 4 1/4 x 1 3/4, Two Beeway.....	per M	\$10.00
No. 2.—4 1/4 x 4 1/4 x 1 1/2, Plain or No Beeway.....	per M	9.00
No. 2.—3 3/4 x 5 x 1 1/2, Plain or No Beeway.....	per M	9.00
No. 2.—4 x 5 x 1 7/16, Plain or No Beeway.....	per M	9.00
Mill Run—4 x 5 x 1 7/16, Plain or No Beeway.....	per M	9.70

The above prices are net, cash with order. Sold in lots of not less than 1000.

We are well prepared to fill all orders for Bee Supplies promptly. Send us your inquiries and we will be pleased to quote you our prices. Send us your name and address and receive our next season's catalog and price list when same is published.

AUGUST LOTZ COMPANY, -:- BOYD, WISCONSIN

Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant for 1920. We are paying higher prices than ever for wax. We work wax for cash or on shares.

Root's Bee-supplies

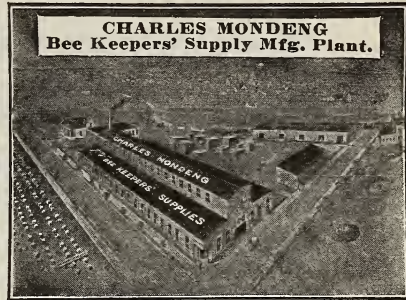
Big stock, wholesale and retail. - Big catalog free.

Carl F. Buck

The Comb-foundation Specialist
Augusta, Kansas

Established 1899

BEE SUPPLIES



The largest and oldest Bee Supply manufacturer in Minnesota can offer you **bee ware** that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Send for my 1920 Catalog and Price List. **Think** it over and in thinking be wise and save money by placing your orders before the rush is on. Will Take Beeswax in Trade at Highest Market Prices.

CHARLES MONDENG

146 Newton Ave., N. Minneapolis, Minn.

Protect Yourself

against Price advances, by ordering your BEE SUPPLIES for the coming season, as soon as possible. Market conditions already have forced a 20% advance on certain lines—and in the near future you will find practically all Supply Prices going up 20% to 50%.

On Hives, Supers, Frames, Sections, Section-Holders, Separators, and Foundation we are still quoting the old figures; but there's no telling how soon these prices, too, will be forced up. **DON'T WAIT** for this to happen—get these needed Supplies at our present low prices by ordering early.

We are prepared to fill hurry orders for white pine Hives and Frames—basswood Sections, Section-Holders, and Separators—clear white Flint Glass Honey Bottles with large screw tops.

Why not take advantage of my present Prices before it's too late—and thereby save Dollars on your Bee Supplies for next season? Better write for those Prices right now—TODAY.

P. J. DOLL BEE SUPPLY CO.

NICOLLET ISLAND

MINNEAPOLIS, MINN.

ANNOUNCEMENT

We can ship at once from stock the containers you need to market your crops. We are particularly well supplied with the following:

Standard 5-gal. square cans, in heavy, first-class shipping cases, of either one or two cans each. Get our quotations on bulk shipments.

Glass jars in assortments of 15, 16, and 20 ounce sizes, packed in cartons, 2 dozen each. These jars are a popular container, and you cannot order too soon, and in sufficient quantities to market your crop.

Square cans, with screw cap, packed in heavy cartons, particularly well adapted to parcel post shipments. We know of no neater, safer, cheaper way to send honey short distances. These cartons, properly marked, are great advertisers, too. We carry in stock the gallon, the half and fourth gallon sizes.

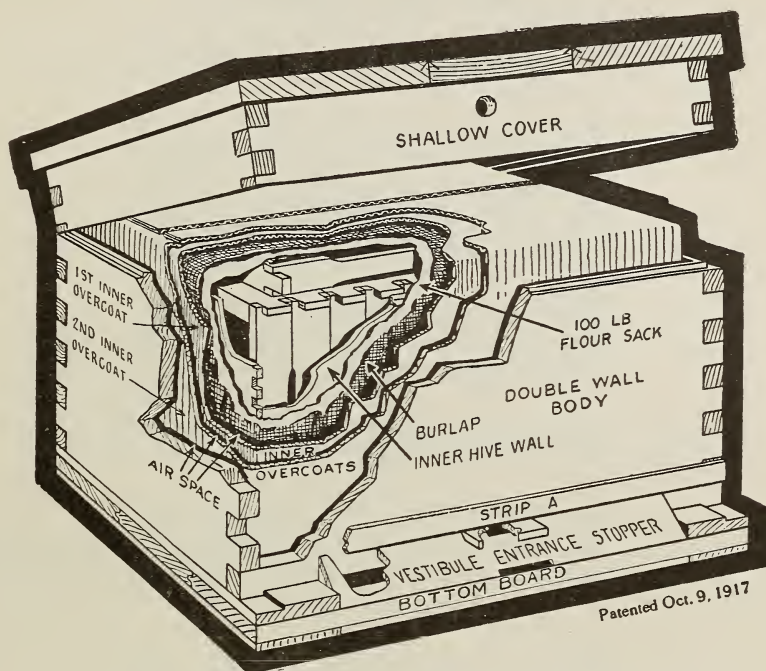
We will be glad to estimate and quote on what containers you are going to need to market your crop, if you will let us know how much honey you expect to market. We believe that we can interest you.

Remember, we can ship at once. Located as we are in the very focal center of Western shipping activities, we can save you valuable time, and perhaps excessive freight charges.



THE A. I. ROOT COMPANY of Iowa
COUNCIL BLUFFS, IOWA

Winter Problem Solved by the Hive with an Inner Overcoat . .



Furnished with Jumbo Depth or Standard Hoffman Frames.

The above illustration shows the substantial, compact, neat and efficient equipment that winters normal colonies of bees perfectly. It consists of a frame of honey laid over the top of the others; if you have no extras, one can be removed from the brood-nest for the purpose. A 100-pound flour sack is spread over the top and a piece of burlap 34 x 36 inches is laid over this. The First Inner Overcoat is telescoped down over the brood-nest in between the inner and outer hive walls, the flour sack and burlap being carried down with it. This has the effect of wrapping the brood-nest in a blanket. The Second Inner Overcoat is then telescoped down over the first. A quilt of old carpet or similar material can be cut the right size and laid in over the burlap, inside the inner overcoats. The Inner Overcoats are removed in the Spring and stored away in the flat. This insulates the colony with a $\frac{3}{8}$ inner hive wall, with a flour sack and burlap wrapped about it, two thicknesses of corrugated paper board around the sides and ends and four thicknesses over the top, together with the intervening air spaces and the $\frac{7}{8}$ outer hive wall. The work is done quickly and easily with no litter of packing materials.

Order a sample shipment of these hives to try out the coming WINTER and be convinced of their efficiency and durability. Catalog and special circulars sent on request.

A. G. Woodman Co., Grand Rapids Mich., U. S. A.

DO YOU BELIEVE IN PREPAREDNESS?

Of course you do. Then begin right now to plan for next season. Make out your list of supplies, send in your order, and receive our 7% early order discount for this month.

This season for 1920 has been a fine one, hasn't it? Better plan for an even bigger crop for next year.

Secure your supplies and the bees will do the rest.

Yes, winter is on its way again, but "How time flies," and before we hardly realize you will be in need of supplies again.

What a comfortable feeling to stretch out before the fire and murmur, "Well, supplies are all in for next season; when the bees are ready I am." TRY IT.

Write for our catalog.

F. A. Salisbury .
1631 West Genesee Street
Syracuse, N. Y.

*QUEENS**QUEENS***PACKAGE BEES****ORDERS are coming in daily for 1921 SHIPPING**

My FREE circular gives prices, etc. in detail. Safe delivery GUARANTEED. We ship thousands of pounds all over the U. S. A. and Canada.

Our Fall flow is very favorable for Queen-rearing up to about Christmas. So we can furnish you queens the balance of this year at the following prices:

	1	6	12	50	100
Untested Queens	\$1.50	\$ 7.50	\$13.50	\$ 48.00	\$ 95.00
Select Untested	1.65	8.25	14.85	52.80	104.50
Tested Queen ...	2.50	13.50	27.00	110.00	
Select Tested...	3.00	16.30			

NUECES COUNTY APIARIES, CALLEN, TEXAS**E. B. AULT, Prop.****YOUR MONEY AND OURS****To Our Beekeeper Friends:**

In last month's Gleanings in Bee Culture we said that we were offering you \$100,000 more of our 7% second preferred stock, having every safety for the investor. It is issued solely to meet the demands of growth in our business. You can buy this stock at par and accrued dividend. If you do buy it, that is your money in our business. In this business of ours we have been investing every dollar of our own for many years. So your money and ours, if you purchase this stock, is in together. We wouldn't ask anybody to invest in anything that we would not invest in ourselves.

Write for fullest information. We shall be pleased to answer any questions about our business that an intending purchaser of stock may ask.

The A. I. Root Company**A. I. Root, Pres.****Medina, Ohio.****J. T. Calvert, Secy.**

“falcon” STANDS FOR QUALITY

CERTAINLY prices are high today, but don't make the mistake of buying Low Price goods. Don't compromise with *quality*.

“falcon” bees and supplies are quality products, backed by 40 years of satisfactory service. Experienced bee-men in this country and abroad recognize them, buy them, are successful with them. You'll get the same good results.

Write for Our Red Catalog

W. T. FALCONER MANUFACTURING COMPANY.

Falconer (near Jamestown), N. Y., U. S. A.

“Where the best beehives come from”

QUEENS, NUCLEI, BEES BY THE POUND, AND FULL COLONIES

Hives, Supers, Frames, etc., at half price, any thing in the bee line

Prompt Service

Highest Quality

Satisfaction

Fellow Beekeepers: If you are in need of pound packages of bees or bee-supplies, let us figure with you; it takes only a two-cent stamp to get our quotations on your wants. If interested in package bees cheap, we can furnish you hybrid bees with pure Italian queens at a very low price; they will build up as quick as pure Italians, and the price is very much lower. We will have several thousand pounds to offer next season and can guarantee to make shipment on time as early as you want them: for example, if you expect to buy one pound of pure Italian bees with queen for \$4.50, hadn't you rather buy one pound of hybrid bees with a pure Italian queen for \$3.50 and save \$1.00 per pound? In six or seven weeks you would have a pure Italian colony at a much lower price. We will be in position next season to rear over three thousand queens per month that are as good as money can buy; our strain is proved and is of highest quality; we guarantee to please you. Prompt service and fair dealings are our reputation; feel assured that we are behind any thing we sell. If you are in need of any hives, frames, supers, packages, etc., send us a list and let us quote you our prices. Our goods will please; they are guaranteed to fit and come up to standard, or your money refunded. Our supplies are the fruit of our long experience. Let us have your orders in advance.

Prices of Our Three-banded Italian Queens for 1921:

	1	6	12
Untested	\$1.50	\$ 8.00	\$15.00
Select Untested.....	1.75	9.50	17.00
Tested	3.00	14.75	25.00
Select Tested.....	4.00	23.00	42.00

Write for Prices on 100 or more.

Packages Hybrid Bees with Pure Italian Queen:

1-pound package with untested Italian queen.....	\$3.50
2-pound package with untested Italian queen.....	\$5.25

Italians Guaranteed to Equal Any:

1-pound package with untested queen.....	\$4.50
2-pound package with untested queen.....	\$7.00

Nuclei, Pure Italian:

1-Frame with untested queen.....	\$5.00
2-Frame with untested queen.....	\$8.00
Nuclei are on good combs full of brood with plenty of bees.	

We guarantee every thing we sell; safe arrival and satisfaction; you take no risk; customer is the judge. All queens guaranteed to be purely mated. We are now booking orders, with one-fourth down for spring delivery. Place your order now.

The Farmer Apiaries - - Ramer, Alabama

FRICITION TOP PAILS

All Ready for delivery at Newark, N. Y.

2 1/2 -lb. cans, F. O. B.	-	-	\$6.50 per 100
3 " " " "	-	-	7.00 " "
5 " " " "	-	-	10.70 " "
10 " " " "	-	-	16.00 " "

We also have a complete line of Extractors, Bee Supplies, Foundation, Bee Boxes, etc.

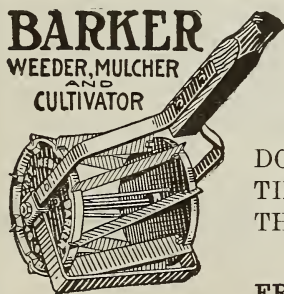
Mail us your list of requirements and we can quote you prices that will please you.

THE DERROY TAYLOR COMPANY

NEWARK, WAYNE COUNTY, NEW YORK

BARKER

WEEDER, MULCHER
AND
CULTIVATOR



Weeds and Mulches

In One Operation

DOES BETTER WORK THAN A HOE—TEN TIMES AS FAST—SAVES TIME AND LABOR, THE TWO BIG EXPENSE ITEMS—EASY TO OPERATE.

FREE—Illustrated Book and Factory-to-User Offer

We want every garden grower to know just how this marvelous machine will make his work easier and increase his profits. So we have prepared a book showing photographs of it at work and fully describing its principle. Explains how steel blades, revolving against a stationary knife (like a lawn mower) destroy the weeds and at the same time break up the crust and clods and pulverize the surface into a level, moisture-retaining mulch.

"Best Weed Killer Ever Used"

LEAF GUARDS—The Barker gets close to the plants. Cuts runners. Has leaf guards; also easily attached shovels for deeper cultivation—*making three garden tools in one.* A boy can use it. Five sizes. Send today for book, free and postpaid.

BARKER
MFG. CO.
Dept. 10

DAVID CITY, NEB.

Gentlemen. — Send me postpaid your free book and Factory-to-User Offer.

BARKER MANUFACTURING CO.

Dept. 10 David City, Nebraska

Name _____

State _____

Town _____

R. R. No. _____ Box _____

DONT SEND A PENNY

The shoes offered here are such wonderful values that we gladly send them, **no money down**. You will find them so well made and so stylish and such big money-saving bargains that you will surely keep them. So don't hesitate—just fill out and mail the coupon and we will send you a pair of your size. No need for you to pay higher prices when you can buy direct from us—and no need sending money in advance before receiving the shoes. Why pay out \$6, \$8 or more for shoes not nearly so good? Act now. Mail the coupon today while this special offer holds good. Pay only when shoes arrive. And your money back if you want it.

Great Work Shoe Offer

We can't tell you enough about these shoes here. This shoe is built to meet the demand for an outdoor city workers' shoe and for the modern farmer. Send and see for yourself. Built on stylish lace Blucher last. The special tanning process makes the leather proof against acids in milk, manure, soil, gasoline, etc. They outwear three ordinary pair of shoes. Most comfortable work shoe ever made. Very soft and easy on the feet. Made by a special process which leaves all the "life" in the leather and gives it wonderful wear-resisting quality. Double soles and heels. Dirt and waterproof tongue. Heavy chrome leather tops. Just slip them on and see if they are not the most comfortable, most wonderful wearing work shoes you ever wore.

Pay **\$3.98** for shoes on arrival. If after examination you only don't find them all you expect, send them back and we will refund your money.

Get This Remarkable Bargain



Mark X in ☐ by No. AX15106 in coupon. Be sure to give size wanted.

Send Coupon

Keep your money until shoes come. Not a cent to pay now. Sent direct to your home on approval. Then let the shoes themselves convince you of their bargain value or return them and get your money back. This is the modern, sensible way to buy—the way thousands are buying their shoes today direct from us—getting satisfaction—saving money. Fill out the coupon and send it now.



To order these shoes mark X in the ☐ by No. AX18068 in coupon. Be sure to give size and width when ordering.

Send No Money With Order

Stylish Dress Shoe

Special bargain to close out a limited stock of these smart Dress Shoes. Act quickly if you want a pair. Made in classy lace Blucher style. Splendid quality calf uppers. Splendid solid leather soles and heels. Come in black only. At our price these shoes challenge all competition. Make your own decision after you examine and try them on. Sent absolutely on approval. You must see them to appreciate the fine quality of material, workmanship and astonishing bargain value. No money with order. Be sure to give size when ordering.

Pay **\$3.98** for shoes on arrival. And that re-only turned if you don't keep the shoes. Send today because a price like this soon sells the stock.

Leonard-Morton & Co., Dept. 6928 Chicago

Send at once the shoes which I have marked X in ☐ below. I will pay price for shoes on arrival with the understanding that if I do not want to keep them I can send them back and you will refund my money.

☐ Work Shoes No. AX18068 \$3.98 ☐ Dress Shoes No. AX15106 \$3.98

Size.....

Name.....

Address

Leonard-Morton & Co.
Dept. 6928 Chicago

THREE WAYS IN WHICH BEEKEEPERS CAN SAVE

So long as lumber, together with all kinds of iron products and labor costs, remain at present abnormal prices, the prices of beekeepers' supplies will have to remain abnormally high, too. We dislike this situation as much as the beekeeper. It is no good to us, and we know it, and we trust the situation will correct itself as the war times recede.

In the meantime can the beekeeper do anything to economize and at the same time keep his business going full steam ahead? He can. There are three ways open to him right now:

Money-Saving Pre-War Prices.—There are pre-war prices still existing on some considerable lists of goods kept at our Branch Offices at Philadelphia, Norfolk, Indianapolis and Chicago, and at the Home Office at Medina. These lists of very low-priced supplies include shipping cases, bottom-boards, covers, frames, sections, smokers, queen-rearing tools, fences and separators, etc. These are new goods, but in most cases they are in sizes or styles that we no longer list and so prefer to close them out at a big sacrifice. Those who can manage to use these goods will make a big saving by ordering while they last. The prices are only $\frac{1}{3}$ to $\frac{2}{3}$ the prices now made on standard goods. They are offered subject to previous sale. Don't delay. Write for lists to Medina home office.

Save Freight Charges.—We have car-lot agents at many points over the United States as well as Branch Offices at 23 Leonard St., New York; 10 Vine St., Philadelphia; 224 West Huron St., Chicago; 290 East 6th St., St. Paul; 10 Commerce St., Norfolk, Va.; 873 Massachusetts Ave., Indianapolis; 224 Poydras St., New Orleans. By ordering from our nearest agent or Branch Office you will save freight charges—and these freight charges have advanced about 70% as the result of the war.

Early Order Discounts.—By taking advantage of our early order cash discounts you can save 7% in October, 6% in November and 5% in December. Send for our year-end special price sheet, too, when taking advantage of these early order discounts.

THE A. I. ROOT COMPANY

Medina, Ohio

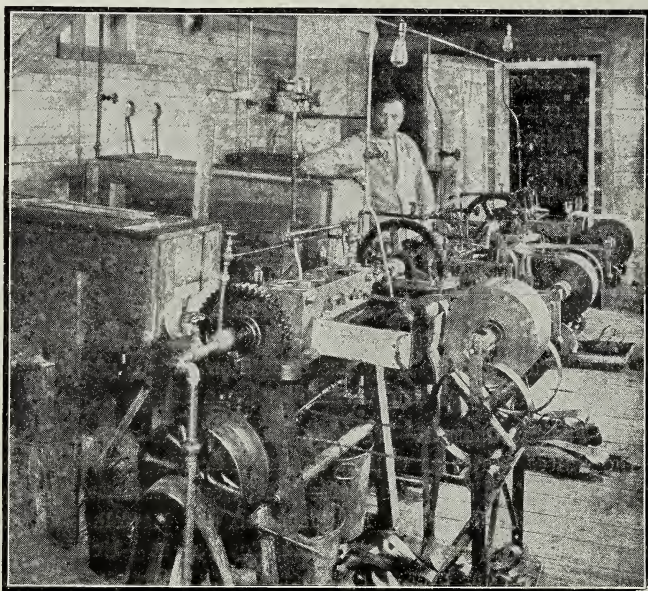
DADANT QUALITY IN MACHINE - MADE FOUNDATION

The WEED PROCESS was not invented in a single day. E. B. Weed, who invented the present system of machinery on which DADANT'S FOUNDATION is manufactured, made many experiments before he was successful.

Part of his experiments were made at the Dadant factory. Some of our older workmen can still recall the hot wax squirting everywhere from the jaws of different presses before the modern sheeting machine was finally evolved.

His process was promptly accepted by the Dadants as a step forward, not in the making of a foundation superior to the handmade, but of insuring quantities sufficient to supply an ever growing demand.

Into this process were carried all the care, all the pains, all the tests, which had made DADANT'S FOUNDATION so well liked.



Sheeting Wax on Weed Machines for Milling into
DADANT'S FOUNDATION

Nailing machines have largely replaced hammers, and trucks taken the place of horses and wagons, but the same care, the same exactness of having all foundation first of all satisfactory to the Dadants and to the Dadant bees is still exercised and will continue to be.

DADANT'S FOUNDATION

Every Inch, Every Pound, Every Ton, Equal to any sample we have ever sent out. Specify it to your Dealer. If he hasn't it write us.

DADANT & SONS, HAMILTON, ILL.

CATALOG AND PRICES ON BEE SUPPLIES, BEESWAX, WAX WORKING INTO COMB FOUNDATION, AND COMB RENDERING FOR THE ASKING